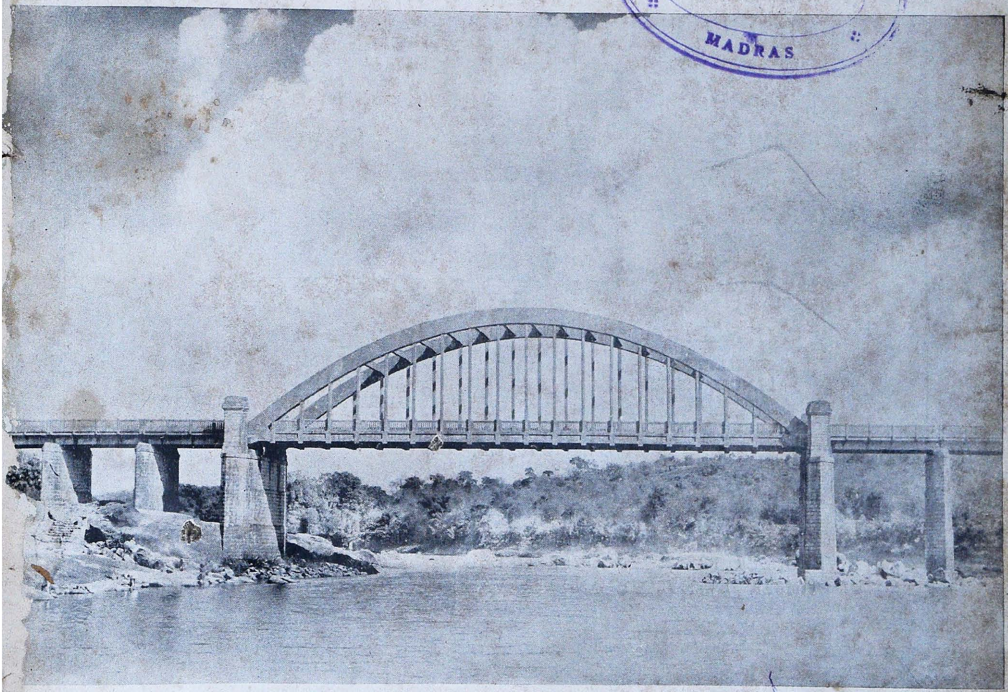
THE BUILDING GAZETTE

VOLUME 2 | FEBRUARY 15, 1949 | NUMBER 2

836
1-49

OFFICE OF THE REGISTRAR OF BOOKS
28 MAR 1949
MADRAS



SHIVAPUR BRIDGE IN SOUTH CANARA

JL
D3m211, N48B9
N49. 2. 1-3
177774.

PIONEERS IN

PREFABRICATION

CALL ON OUR TECHNICAL AND
PRACTICAL EXPERIENCE
IN CONSTRUCTION

ROOF TRUSSES
Engineered and Prefabricated Bowstring, Pratt, Warren, Scissors, Others.

LAMINATED—Arches, Beams, Assemblies.

HANGARS—Quad-Hangars, T-Hangars, Commercial Hangars.

CINEMA BUILDINGS—Studios, Temporary Halls.

HOUSING—Prefabricated Panels.

BRIDGES—Prefabricated and Pressure Impregnated, Foot and Highway.

GODOWNS—Paddy, Ground-nut, Soap and other Godowns.

FACTORIES—Textile, Vegetable Oil, Chemical, etc.

GARAGES—for Motor Buses, Lorries, Cars.

Apply for folder to:

WELDWOOD ROOF AND BRIDGE STRUCTURES

OFFICE:
4, MILLER ROAD,
BANGALORE.

PLANT:
PARADISE VALLEY,
PARADISE VALLEY P.O.,
BANGALORE.

CHIEF ENGINEER:
Dr. S. KAMESAM, Hon. D.Sc., B.E., M.I.E. (Ind.), F.A.Sc., M.E. (Hons.),

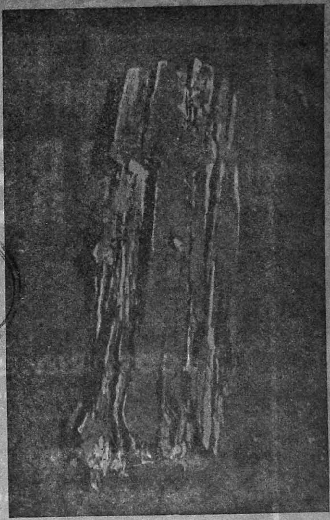
CONSULTANT TO DOMINION GOVERNMENT ON USING TREATED WOOD IN PLACE OF STEEL

ALL TIMBER TREATED WITH THE WORLD FAMOUS "ASCU" WOOD PRESERVATIVE UNDER PRESSURE. OVER ONE AND A HALF MILLION CUBIC FEET OF TIMBER IN MYSORE AND TRAVANCORE PRESERVED WITH "ASCU".

RECORD OF ASCU:

Over two million gallons used in India.
Over a million railway-sleepers treated with 'Ascu'.
Over 12,500 miles of overhead lines erected with Ascu treated poles.
Several thousand ASCU preserved pine poles standing for several years in the U.S.A.

You HAVE SEEN THIS

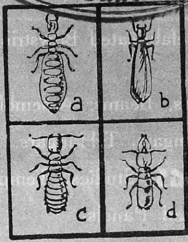


- IN YOUR HOME
- IN YOUR BARN

OFFICE OF THE REGISTRAR OF BOOKS
28 MAR 1949
MADRAS

WHITE-ANTED!

But it is too late when you see it. If you are planning a new house, new stables, wool-shed, dairy or other structure it is an easy job to render your timber immune to attack by termites with HARDIPROOF. HARDIPROOF also protects against dry-rot. We manufacture HARDIPROOF (Green) and HARDIPROOF Clear.



Left: The White Ant family of destroyers.
(a) Queen. *(b) Male.*
(c) Worker. *(d) Soldier.*

. . *and* YOU'VE SEEN THIS !

- IN YOUR STACK COVERS
- IN YOUR TARPAULINS

YOU CANNOT AFFORD LOSS FROM THIS SOURCE!

★ HARDIPROOF (Green) and HARDIPROOF Clear can be safely applied to all types of textile fabrics, and renders them immune to fungus attack. You can readily apply HARDIPROOF (Green) or HARDIPROOF Clear to canvas, tarpaulins, ropes, jute goods, tents, sails and nets.

HARDIPROOF (Green) is guaranteed to contain 20% of Copper Naphthenate and can be dipped, brushed, or sprayed. It is insoluble in water and does not leach out like other preservatives.

HARDIPROOF

ONE GALLON OF HARDIPROOF WILL COVER APPROXIMATELY 320 SQ. FEET

is Manufactured by

Addisons Paints & Chemicals Ltd.,

MADRAS

Distributed by

You HAVE SEEN THIS

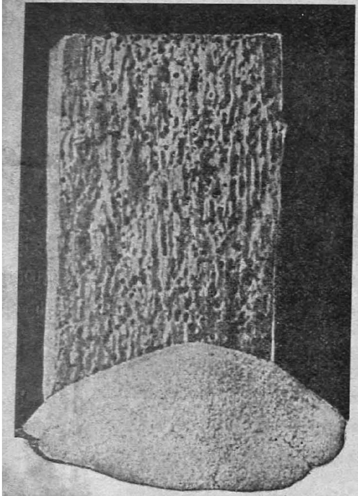
- IN YOUR FENCING POSTS
- IN YOUR BARN FLOORS

DRY ROT!

All due to fungus attack. It starts generally where wood is in contact with earth or masonry—where ventilation is lacking. Pre-treatment with HARDIPROOF renders timber immune. Treatment with HARDIPROOF is simple and cheap. We manufacture HARDIPROOF (Green) and HARDIPROOF Clear.

. . *and* YOU'VE SEEN THIS !

- IN YOUR FURNITURE. . .
- IN YOUR GARDEN SEATS



Just a small patch of fine powder at the foot of a cupboard or piece of furniture—a sign that borers are at work. Examination will show the tiny holes from which it comes. An application of HARDIPROOF (Green) or HARDIPROOF Clear will prevent reinfestation with the next life cycle of the borer.

You are being Robbed!

Each year Australian farmers and householders incur great loss because of the ravages of these pests. If you are wise you will take the simple precaution of using HARDIPROOF (Green) or HARDIPROOF Clear to counter this loss.

HARDIPROOF (Green) is guaranteed to contain 20% of Copper Naphthenate and can be dipped, brushed or sprayed. It is insoluble in water and does not leach out like other preservatives.

HARDIPROOF

ONE GALLON OF HARDIPROOF WILL COVER APPROXIMATELY 320 SQ. FEET

is Manufactured by

Addisons Paints & Chemicals Limited

MADRAS

Distributed by

OFFICE OF THE REGISTRAR OF BOOKS
28 MAR 1949
MADRAS

A TRUE NATIONAL STORY

India is just beginning to build new harbours, dams, roads, rails, towns, houses, shops, offices, factories, hospitals, hotels, schools and recreation centres which will change the face of India over the next few years.

Here is the start of a building era without precedent.

How many do you think control these vast developments? How many of them could you name? More important if you have anything to sell, how many could name YOUR COMPANY, would recommend and buy YOUR Products?

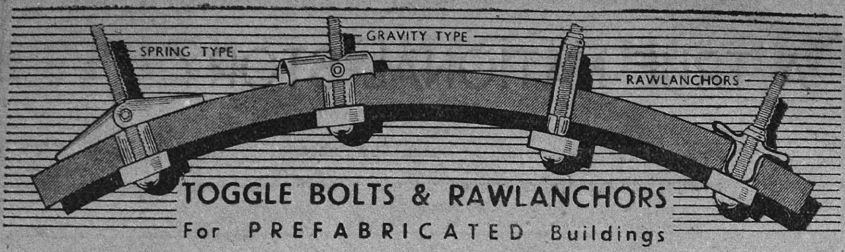
THE GREAT BUILDING PROGRAMME IS DOMINATED BY THE READERS OF ONE MAGAZINE THE BUILDING GAZETTE

BUILDING GAZETTE architects and engineers will do the designing. BUILDING GAZETTE bankers will do the financing. BUILDING GAZETTE contractors will do the construction. And BUILDING GAZETTE advertisers will supply a great part of the materials and equipments.

If you want to sell anything and want to "SEE" these men month after month—if you want to inform them about your products month after month—REACH them through the pages of the BUILDING GAZETTE, month after month.

THE BUILDING GAZETTE

1/11, MUKKER NALLAMUTHU STREET, G.T., MADRAS.



TOGGLE BOLTS & RAWLANCHORS

For PREFABRICATED Buildings

PERMANENT FIXINGS can be made to Wallboards, Plasterboards, Insulating and Laminated Boards, Hollow Bricks, Hollow Tiles, Sheet Metal etc.

Rawlplug Fixing Devices are ideal for modern building construction where extensive use is made of Hollow Bricks, Tiles and Hollow Partitions in which screws or bolts would be difficult to use.

For PREFABRICATED buildings, Rawlplug Spring Toggles, Gravity Toggles and Rawlanchors eliminate the need for prefixing wood battens in situ in walls and ceilings.

The devices are so constructed that they spread the strain over wide areas and cannot become dislodged easily.

RAWLPLUG

Write for detailed literature to

Distributors for India & Pakistan: THE ORIENTAL ELECT. & ENG. CO. NORTON BUILDINGS, CALCUTTA.

Available from: **CROMPTON ENGINEERING CO. (MADRAS) LTD.**
2nd LINE BEACH, :: :: MADRAS-1.

MILLARS'

MACHINERY

Concrete Mixers—Tilting and Non-Tilting Types.
Asphalt Mixers—for Hot and Cold Mix.
Roller Pan Mixers for Mortar.
Diaphragm Suction Pumps for effective lift up to 25 ft.
Self-Priming Pumps for handling Seepage at lowest possible cost.
Tower Hoists for speedy construction.
Complete Wellpoint Pumping Equipment for dewatering—the only successful method of combating running sand.

TIMBER

Hardwoods - Softwoods - Plywoods - Box Shooks.

Millars' Timber and Trading Company Ltd.

(Incorporated in England)

Victoria House, Victoria Road, BOMBAY 27.

Telephone: 41077 :: :: *Telegrams*: JARRAH

THE BUILDING GAZETTE

AN INDEPENDENT MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF BUILDING INDUSTRY

VOLUME 2 FEBRUARY 15, 1949 NUMBER 2

Articles, photographs, and drawings with a view to publication will be carefully considered. All such articles and illustration should bear the name and address of the sender, and postage should be sent to cover their return if desired in the event of non-acceptance. All communications on Editorial matters should be addressed to the Editor, and all those pertaining to Advertisements to the Manager, THE BUILDING GAZETTE, 1/11, Mukker Nallamuthu Street, G.T., Madras.

●

SUBSCRIPTION RATE IN INDIA, PAKISTAN, BURMA & CEYLON IS Rs. 6 PER ANNUM. SINGLE COPIES As. 9 EACH. POST FREE.

●

THE BUILDING GAZETTE is published on the 15th of each month. Complete copy instructions and Blocks for Advertisements must reach the Office not later than the 31st of the month preceding that in which the advertisement is to appear.

●

THE BUILDING GAZETTE

1/11, MUKKER NALLAMUTHU STREET

G.T., MADRAS.

EDITED BY T. N. SUBRAMANIAM

Associate, Faculty of Surveyors of England

●

PRINCIPAL CONTENTS

5 HOUSES AND HOUSING

6 NOTES AND TOPICS

8 SOLVING HOUSING PROBLEM IN INDIA

11 HOME LIFE UNDER THE MICROSCOPE

12 TENNESSEE VALLEY SCHEME

13 LAW REPORT

14 RECENT ACTIVITIES

15 TOWN PLANNING IN INDIA

16 PLAN OF A MIDDLE CLASS HOUSE

17 WOOD PRESERVATIVES

19 FLOOR FOR STORAGE OF FLOUR, GRAIN OR SEED

20 CONTRACTORS' ORGANISATION AND ESTIMATING SECTION

22 COCONUT OIL AS FUEL

ACOUSTICS

24 SHERARDIZING

26 CONTRACTS OPEN

RESULTS OF TENDERS

27 PROPOSED NEW WORKS

28 EDUCATIONAL

29 BOOKS FOR READING

30 CURRENT WAGES FOR MEASURED WORK

BANKS
AND
BANKING

INTRODUCED THROUGH THE BUILDING GAZETTE

Figures indicate the current rates per cent of interest to new investors. Investors are advised to communicate direct with the Bank of their choice so that they may obtain full details of any special advantages which are available.

IN THEIR OWN INTERESTS BANKS ARE REQUESTED TO ENSURE THAT THE JOURNAL IS ADVISED OF ALTERATIONS OF RATES OR CONDITIONS AS AND WHEN THEY OCCUR.

* = *Particulars obtainable only on application to the Bank*
— = *Investments not received or temporarily suspended.*

BHARATHA LAKSHMI BANK: Madras.—RAJAH OF BOBBILI, *Chairman*, 2¾ to 3¼.

CALCUTTA NATIONAL BANK: Madras.—S. M. BHATTACHARYA, *Chairman*. 6 months—; 1 year 2½; 2 years—.

EGMORE BENEFIT SOCIETY: Madras.—T. R. VARADARAJA PILLAI, *Secretary*, 1 year 3½.

HINDU BANK: Karur. — K. S. ANANTHA RAO, *Manager*, 6 months 3½; 1 year 4; 2 years 4½.

INDO-COMMERCIAL BANK: Madras.—S. N. N. SANKARALINGA IYER, *Managing Director*, 6 months—; 1 year 2¾; 2 years 3.

KANNIKA BANK, Kodambakkam, Madras.—K. V. MUTHUKRISHNA CHETTIAR, *Managing Director*, 6 months 3½; 1 year 4; 2 years 4¼.

KARUR VYSYA BANK: Karur.—M. LAKSHMINARAYANAN, B.A., B.L., *Secretary*, 6 months 3½; 1 year 4½; 2 years 4.

KUMBAKONAM BANK: Kumbakonam.—S. MAHALINGA IYER, B.A., B.L., *Managing Director*, 6 months 3; 1 year 3; 2 years 3¾.

LAKSHMI VILAS BANK: Karur.—V. S. N. Ramalingam Chettiar, *Chairman*, 6 months *; 1 year 4½; 2 years 4½.

MADRAS MUTUAL BENEFIT PERMANENT FUND 69, Big Street, Madras 5. — V. THIRUMALAI IYENGAR, *Secretary*, 1 year 4; 2 years 4¼.

MADURA MERCANTILE BANK: Madras.—K. M. S. LAKSHMANIER, *Chairman*, 6 months—; 1 year 3; 2 years 3½.

SOUTH INDIA BANK: Tinnevelly.—6 months 2½; 1 year 2¾; 2 years 3.

TRAVANCORE BANK: Trivandrum.—Dr. LUDWIK ARONSON, *Managing Director*, 6 months*; 1 year*; 2 years—.

BUYERS' GUIDE

FOR	SEE PAGE
ARCHITECT	31
ASPHALT MIXERS	2
BANKS	4
BOOKS	29
BRICKS	31
BUILDERS	31
BUILDING TRADES EXHIBITION	Back Cover
CEILING TILES	31
CONCRETE MIXERS	2
CONTRACTORS	32
EMPLOYMENT EXCHANGE	31
FLOORING TILES	31
HOISTS	2
PLUMBING & SANITARY	31
PRINTING	32
PUMPS	2
PUNCTURE SEALER	31
PLYWOODS	2
ROLLER PAN MIXERS	2
SEALER	25
TILES	Inside Cover
TIMBER	2

HOUSES AND HOUSING

No phrase is now more familiar than that of "houses for the working classes."

The Housing problem, if judged by reasonable standards, assumes indeed formidable dimensions. The qualitative aspect of our housing problem is, in fact, more neglected than the quantitative aspect. This is a cardinal fact to be borne in mind in all discussions of the housing problem.

Happily, public opinion has never, perhaps, been more fully alive to the deficiencies of our housing position than it is today. It is, therefore, apparent that there is a very extensive field for future building society service.

We do not consider calculations of the needs of the future as of much value for, apart from population, other factors, economic, local, social, traditional, come in, and any estimates which do not take account of these are apt to be upset with disconcerting abruptness.

We have made a recent survey of the Housing problem in India as a whole facing the existing populace as well as the unexpected refugees.

Disappointed as we must be with the set backs the housing schemes have suffered due to lack of initiative, it is also clear that the veterans of the building industry have not attempted to mobilise their own resourcefulness and place before the National Government any specific advice as a Building Industries' National Council can do and accomplish.

The provinces of East Punjab, Bombay and West Bengal, however, deserve credit for the way with which they have thus far approached this problem, although the Madras province exhibits lack of technique as well as finance. We are yet to understand as to whom exactly the Madras Minister for Housing is seeking to provide houses at Rs. 100 each!

Every problem has a solution and the time has come for the engineer to do his best. As the artist must mix his paints with brains, so the planner needs imaginative vision, in addition to technical skill, in dealing with a great social problem like Housing.

It, therefore, behooves on those who seek positions of palpable responsibility to so accept only if they are confident enough to sit and evolve solutions to specific cases by putting into practice the already available knowledge in their own possession and keep abreast with new techniques.

NOTES & TOPICS

Damodar Valley Corporation.

In an administration like the Damodar Valley Corporation, which ought primarily to be the concern of engineers, it was just that profession which as yet remained unrepresented on it, said Prof. M. Sen Gupta at the Engineering and Metallurgical Section of the Indian Science Congress held recently at Allahabad.

Whereas on the T.V.A. he could with little effort procure 24 volumes containing an analysis of the different parts of the scheme and even a manual of secretariat practice, all the literature he could get about the D.V.C.—and not without a considerable amount of begging—was a preliminary memorandum of 40 pages.

Prof. Sen Gupta said that the Government should put engineering in its proper place.

Indian Standards Institution.

The Engineering Division Council of the Indian Standards Institution has brought out three draft Indian Specifications on "Fireclay Refractories."

The object of the specifications and tests is to provide an agreed method of evaluation of the three different types of refractories.

Sindhi Township.

The township scheme of Gandhi Dham near Kandla Port (Cutch) sponsored by the Sindhi Resettlement Corporation under the chairmanship of Acharya Kripalani has been granted a loan of Rs. 1,10,00,000 by the Government of India.

Wigmore Consistometer.

An innovation which will probably replace the slump test to determine workability of concrete on the site has been perfected and the apparatus is now being manufactured by Messrs. A. Macklow-Smith Ltd. of London.

Indian Engineers in Canada.

The Ontario Hydro-Electric Power Commission, with its headquarters at Toronto, controls one of the World's greatest link-ups of electric power which includes a vast output from the Niagara system. It is here 14 of our engineers are undergoing training in the planning, construction and administration of hydro-electric projects.

Among the equipment they are studying is the Network Analyser—a very elaborate device which reproduces in miniature and with mathematical exactitude any given set of operating conditions in a power network.

Bombay Housing Board.

The Housing Board of Bombay has commenced functioning since January 15.

The composition of the Board is as follows:

Mr. S. H. Gidwani (Chairman); Messrs. Ramdev A. Podar, Abid Ali Jafferbhoy, B. D. Mhatre and Dr. J. F. Bulsara.

The Chairman's post is a salaried one, but Mr. Gidwani, who is General Manager of a group of Mills, has expressed his willingness to serve in an honorary capacity.

The Board, which has been constituted under the Bombay Housing Board Act, 1948, takes over the programme of housing from the Government. It will promote the solution of the housing problem in conjunction with the Central Housing Board or similar agency of the Government of India set up for the purpose of carrying out the requirements on the subject of housing set forth in the Industrial Truce resolution passed by the Industrial Conference at New Delhi in December 1947.

Aerial Survey of Nepal.

An air survey of Nepal is being undertaken by a British firm who has their office in Calcutta. Special map-making equipment includes cameras able to take up to 500 exposures, each nine inches by nine inches, on one roll.

In a scientific air survey approximately only one-third of the work concerns air photography operations; the rest of the work is done on the ground.

Multi-purpose Projects: Anti-inflation Policy.

The Government plans to spend about Rs. 36 crores—three times more than last year in the current year on the five major multi-purpose projects: Bhakra (East Punjab), Tungabadra (Madras), Damodar Valley (Bihar), Hirakud (Orissa) and Mor (Bengal).

Investigation work on smaller projects such as Kosi (Bihar), Assam Valley and Ganga Barrage (West Bengal) will also be continued with the available technical experts. This is expected to cost nearly Rs. 80 lakhs.

400-year-old Building Moved Intact:

A Unique Engineering Feat.

British engineers have just completed the first stage of a unique engineering feat in the heart of London. A building of great historic interest is being lowered intact to a depth of 20 feet in Whitehall. Above it will then be built 270,000 sq. ft. of Government offices.

The building is a section of King Henry VIII's Palace and the object is to preserve intact the crypt dating back to the 16th century known as the King's wine cellar.

The cellar has been lifted clear of its original site and moved intact to one side. Experts consider that it is the first occasion on which a structure has been moved both horizontally and vertically. The second stage of this engineering feat will be to sink the cellar 20 feet and then restore it to its original position on this lower level. Ten-storey Government buildings will then be constructed above it.

The cellar measures about 20 ft. by 30 ft. and weighs nearly 800 tons. Before being moved it was underpinned with girders of steel and concrete as well as reinforced internally. This has enabled it to bear the strain of being shifted to a distance of 40 ft. on steel rollers.

It will require five days of careful handling to lower it. This will be done one-eighth of an inch at a time and 186 sixteen-ton jacks are to be used.

Madras Harbour Expansion

Mr. K. Santhanam, Minister of State for Transport, Government of India, has observed at Madras that the Government of Madras would be well advised to agree to the scheme of the Madras Port Trust for expansion of the Madras harbour southwards. It was not quite a sound and proper proposition to insist on a northward expansion of the harbour. Expansion of the Port on its northern side would not only be very expensive but technically unsound. If expansion southwards was objected to by the Madras Government, the chances were that the Government of India would be left no alternative except to hold over the scheme for harbour expansion in Madras indefinitely.

Mr. G. P. Alexander in a recent interview to *The Building Gazette* told that the natural direction in which a Port such as Madras should expand is south, taking advantage of the beach which has been artificially reclaimed from the sea by the construction of the harbour. The harbour can be extended northwards but it will be uneconomical, impracticable and it would intensify and extend the erosion north of Cassimode.

The City Council took the view that the extension southwards of the harbour would curtail an amenity for part of the citizens of Madras by preventing access to the sea side and blocking the free passage of breeze from the sea.

All facts considered it appears that the southward extension would not cause so much harm to the citizens as it is generally thought to be and even experts who alone are competent to advise on this matter would agree that the natural and economic expansion could be southwards.

The Government of Madras would take stock of the situation and think right in this matter as a threat of postponement of the whole scheme of harbour expansion is put forth by the Minister of State for Transport in the event of the Madras Government not agreeing for the southward extension.

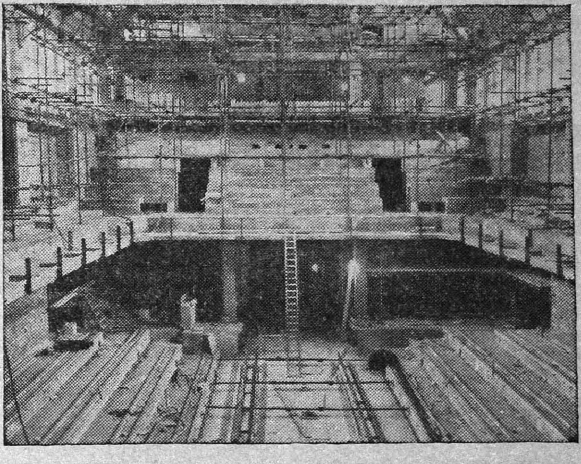
Hardware Exhibition.

The National Hardware Show for 1948 held in New York broke all previous records, both in order, volume and attendance. Of the 63,000 buyers who attended, 2,400 are from the overseas.

In all, over 27,000 products were, it is learnt, displayed at the show.

A Forthcoming Meeting

A Conference of Power Engineers from the provinces and from over 15 States has been convened by the Works, Mines and Power Ministry in New Delhi from February 21 to 24, to consider how the various Governments' schemes for rural electrification can be co-ordinated for the development of the country.



The New Commons Takes Shape

With constructional work and the timbering of the roof well advanced, the new Chamber for the House of Commons at Westminster, London, has taken a definite shape. An interior view of the new Chamber looking north, showing the bench steppings and galleries.

SOLVING HOUSING PROBLEM IN INDIA

Dr. S. KAMESAM, Hon. D.Sc., B.E., M.E. (Hons.), M.I.E. (Ind.), F.A.Sc.,
Formerly Timber Development Officer in Government of India.

Throughout the world, due to almost complete stoppage of building construction during the last war and due to large scale movement of population from villages to towns after the war, an enormous demand for houses resulted. This developed into one of the most vital problems to be solved by any Government, especially the Indian Government, who have had also to face the housing of millions of refugees from Pakistan.

The Prime Minister of India has been repeatedly stating very rightly too that local materials should be given the first priority for house construction and the scientific utilisation of earth and wood should, therefore, form the main basis for solving India's housing problem. Very recently, the Dominion Government have offered Rs. 40 crores to the Bombay Government for installing two or three new townships. The Sindhis are building a new city at Kundla in Gujerat for a few tens of thousands of families. There are several other new townships going up in East Punjab and near Delhi. Besides a few hundred thousand houses required for all these schemes, the new capitals of Orissa and East Punjab require tens of thousand houses. Again, ths labour colonies in India require several hundred thousand houses in the country.

There are, generally speaking, two different types of demand for houses in this country, one is for normal demand where town dwellers want to put up, here and there, houses in or near a city or town. For this type of builder undoubtedly prefabricated housing offers definite advantages. The second kind of demand is for hundreds of thousands of houses at more or less one locality. This requires a very different handling of the problem, as there is no question of transportation of building elements over long distances so that the question of weight of building materials employed is not of much consequence. It is a problem of intensive, scientific and maximum utilisation of all locally available building materials with the minimum quantity of building materials brought to the locality of installation from distant places as the bottleneck of railway transportation is a serious one. It is not a question of sending out building materials or building units from a factory to distant places.

With such a colossal building problem facing India, one might ask whether the problem has received the attention of engineers in this country commensurate with its importance. Has the premier body of engineers in India, the Institution of Engineers, appointed a special committee of experienced steel, timber, concrete and brick engineers to pool all their valuable experience and investigate the problem thoroughly? Has the Dominion Government invoked their active help in this matter? Unfortunately, the answers are in the negative. Before commenting of what the Government have done so far, with the best of endeavour, let us consider which way the solution of the problem lies. The writer was perhaps the first engineer in this country to put up, exactly 12 years ago at the Lucknow Exhibition, a full size prefabricated house of Drawing Room, Dining Room, three Bed Rooms, and other ancillary rooms. The engineers have really not done all that should have been done in the nature of helping Government in this vital question of housing.

With a colossal housing problem before us, and with not much increase in the production of cement or steel during recent years and with much leeway in construction to be made up it is the opinion of the writer that the building engineer should forget using cement and steel (except in small or very small quantities) for mass housing schemes, and depend almost entirely on clay, lime and timber. With the shortage of fuel in or near most towns in India, the minimum of burnt clay products is strongly indicated. The problem may be considered from two main standpoints, one, housing with little or no cement and steel or any imported material, and two, housing with a little cement but with practically no steel. It is to be noted that the acute shortage of steel at present will persist for several years to come.

Housing with neither cement nor steel has to be naturally based on locally available clay or earth and lime, while pressure preserved wood and bamboo panels may be made available from near-by forest areas. In the three essential

features of any house, walls, roof and flooring, burnt clay products like bricks and tiles may be employed for all three, for two only (floors and walls, floors and roof, or roof and walls) or for one, floor, walls or roof only.

Roofs.

While asbestos cement roof sheets (which contain 75 per cent of cement and involve the use of cement in its most ecomomical form for strength and durability) are the best solution for our roofing, till Government or the industry puts up more asbestos sheet factories, one has to consider other alternatives which are immediately available. The types of roof construction which the writer feels that will best suit the conditions existing today are as follows :

Flat.

1. Treated wood 'I' girders with jack arches of brick, the haunches filled with sand and with flat thin tiles at top.

2. Reinforced brick concrete construction (eithar *in situ* or prefabricated) with prestressed wires.

3. Wooden box units with bamboo or reed mats wrapped around them.

Gable.

Lime mortar or surki over wood bamboo panels, with flat tiles.

Instead of flat tiles at the top, asphalt or bitumen stabilised or cement stabilised earth may be employed in comparatively dry localities. In the case of sloping roofs, Mangalore or other type of similar tiles are already being used, but larger sized clay tiles can be made in India with special edges for inter-locking of the tiles. It is to be noted that with increased slope wind pressure on roof increases but there is an economy of structural material. and water drains off from the roof rapidly. In areas of India with low wind pressure, gable roofs are indicated. In areas of high wind pressure with little rain flat roofs are definitely the best.

Floor.

For flooring, a layer of bricks, laid flat or on edge with or without an inch layer of lime surki and a cement rendering with cement to sand (1 : 10) offers an economical and serviceable floor. Whether there is no risk of heavy loads being rolled over the floor, the lime surki layer may be even omitted.

Walls.

There are a number of alternatives as far as walls are concerned. Roughly speaking, India can be divided into two areas from the standpoint of cold, 1. South India excepting the hill stations, and 2. Northern India. In the former area, the minimum temperature during the year may be reckoned to be about 60° F. Therefore no insulation for protection against cold is necessary. As tempratures over 90° F. prevail only for a few months in the year, as far as walls are concerned, no special insulation is indicated. Ample openings in the walls are useful. Especially in mass housing schemes, it may be a luxury to provide for insulation as far as walls are concerned. The height of the walls may also be reduced if proper insulation is provided for in the roof either by installing a double roof with a flat ceiling composed wither of treated bamboo, or woven treated wood veneer, or flat asbestos sheets besides the sloping roof of tiles or asbestos or iron sheets. It is the opinion of the writer that it would be more economical to provide for insulation against heat while designing the roof than to have walls higher than nine feet which will mean not only extra cost of material along the whole perimeter in the house, including the rooms, but entails, also, a larger load on foundations. This means more excavation and material, and corresponding expense. In view of these considerations, the writer suggests a single or even half brick wall nine feet high (with pillars every six feet) where bricks are available, and that at a reasonable price. In this connection Government would do well to put up a number of brick-making factories, including scientifically designed ovens. At present, brick-making in India is most inefficient, and there burning is even more inefficient as probably not more than 10 per cent of the calorific value of India's much needed fuel is actually utilized for burning the bricks. This is most important. While tiles are manufactured in this country very much more efficiently although bricks are used in very much larger numbers, it appears anomalous why large scale brick-making factories have not been installed in much larger numbers than at present.

Where insulation against heat is considered a luxury, 24″ × 12″ tiles of clay can be burnt in box forms and single laminae may be obtained by scratching them before baking. Vertical treated timber members with suitable grooves accommodate such tiles in position and walls are built up. The third solution which the writer has in mind is the manufacture, on a mass production scale of prefabricated wall-frames, based on a module of three feet, so that each unit is about three feet by nine feet. One is a wall panel, the second is a door panel, and the third is a window panel. These are proposed to be installed in such a manner that no load of the roof comes on them. They function merely as weather-protecting units. The frame-work of the house is a twin rigid arch structure. The centre portion is a two-hinged rigid arch with two cantilever members projecting from the rigid structure but the top member forms a continuous girder, thus reducing the bending moment on the cantilever portions to a minimum. The actual construction of these prefabricated elements has been patented by the writer. These elements are very light and they form the irreducible minimum for the framework of a house as far as resistance to external force or superimposed loads are concerned. There is practically no foundation required for supporting the wall,

door and window elements. The inside of the frames may be plastered with clay, lime mortar or gunited with cement mortar, one of cement and ten of sand. As far as the outside plaster is concerned, there is a wider latitude for selection, as resistance to rain is not to be provided for. This consideration automatically eliminates the use of mud or clay, unless it be stabilised with a suitable bituminous emulsion. Lime mortar or cement mortar may be applied either by hand or better "gunited" in mass-housing schemes. There is yet a fourth method in which treated bamboo mats produced with machines is wrapped round laminated wood frame-work for walls and roofs combined or for walls only.

'Alcrete' Houses.

Before this article is concluded the writer would refer to the Alcrete housing scheme on which the Dominion Government have recently invested Rs. 25 lakhs, besides committing themselves to pay royalties on this process to the patentees. The writer had a chance to discuss the merits of this process with several engineers in this country, and the general consensus of opinion appears to be that a scheme like this, depending on the import of thin aluminium sheets for roofing, extruded aluminium sections for roof trusses or girders and for wall framework is, to say the least, a luxury to this country, and can never be expected to solve our housing problem. The Selection of imported (or reinfosted from England), aluminium for roof and wall framework instead of using treated Indian jungle wood is not at all understood. Aluminium is notorious for its tendency to corrosion due to electrolysis, especially in thin sections. Aeroplane engineers know the worries of keeping thin aluminium plates free from corrosion. Corrosion spreads like cancer, and very little can be done in the way of inexpensive welding in thin aluminium sheets. Can aluminium sections, even today at about Rs. 3,500 to Rs. 4,000 per ton compete, either initially or in the long run, with treated jungle-wood wall framework and roof trusses into cement asbestos sheets? A ton of treated jungle-wood costs Rs. 200 to Rs. 240. The name of Mysore has been prominently mentioned in connection with the Alcrete system. It is correct that the sponsors of the process came first to Mysore, but it is also no secret that it received very cold reception indeed in Mysore both from technical experts inside and outside Government, and of businessmen. As far as newspaper reports indicate, the Alcrete process of porous concrete is similar to the Siporex process, developed in Sweden just before the last war, and of another process that was developed during the war by Dr. Otto of Hamburg, which India can probably use free of royalty. One would like to ask whether the expert who took the responsibility of recommending Alcrete have considered the relative merits and cost of this process with other porous concrete processes, based on hydrogen peroxide, urea and other foaming agents, including synthetic resins? Has he done any work in the time of porous concrete? The writer heard during his recent visit abroad that a process very similar to Alcrete has not proved very satisfactory in the matter of resistance to cracking during variations of temperature. Has the expert who recommended this process and committed the Government to an expenditure of a quarter crore of rupees, beside royalties for 12 years, been convinced that this process is more economical and efficient for countering conditions, obtained in N. India where summer temperatures soar over 100° F. for about two months in the year and during winter, temperatures come down to the freezing point for some months. Has he convinced himself that the hollow cement block method of construction is not more economical and even more efficient from the point of view of installation than the Alcrete process, especially for mass-housing schemes? Is it realised that all the plant required for the manufacture of hollow cement blocks can be manufactured in India, and there are no royalties to pay? Has the Govt. housing expert considered the use of pressure treated Indian jungle-wood frames for roofs and walls before committing to the use of aluminium? Has he considered the advantages and economy, initially and in the long run, of such well tried roofing material as cement asbestos sheets?

It is obvious that no process is ideal for the very different conditions prevailing in different parts of India. A selection is imperative, for each set of weather conditions and the availability of building materials in the vicinity. The writer is almost alarmed by the publicity given to the acceptance of Alcrete process by the Dominion Government (very probably as an experiment), and it is to warn Governmental and private agencies that are interested in mass housing schemes that they should be wary indeed about accepting this process for solving one mass housing scheme since the public as well as Government have a right to know the answers to some of the questions put in this article, before they are offered the Alcrete process almost as a panacea for housing shortage in India. The writer, sepecially after his recent round the world trip, when he had an opportunity to discuss the matter of mass-housing with experts, is of the opinion that the solution to our mass-housing problem should be based on the scientific utilisation of burnt and unburnt clay products, and treated jungle-wood and bamboo. The writer is making some experiment with burnt clay units which promise very useful results. As Great Britain is importing aluminium from the U.S.A. under the Marshall Act, *prima facie* our housing problem does not bid fair to be solved by importing aluminium sheets from the country import, i.e., Great Britain, even if the U.S.A. has no objection to the export of aluminium materials from Great Britain. It is to be hoped that engineers in India will respond to the Prime Minister's repeated advice to use clay and earth, available everywhere, scientifically and in a planned and intensive manner.

HOME LIFE UNDER THE MICROSCOPE

S. GORDON COLLER

Of all the great advances Britain has made since the war in furthering the welfare of the community—education, health, national insurance, and the rest—none interests the man-in-the street more than housing. The old saying does not claim "an Englishman's house is his castle," however; it uses the untranslatable word "home" to connote, besides the walls, the comfort, individuality and warmth of the family life they enclose. It is to this aspect of the housing programme that a great part of the Government's attention is now devoted.

In the past four years the British people have set out to put their home life under the microscope for the first time in history. In every part of the country "average families" have joined with experts in building science, heating and ventilating engineers, architects, furniture designers and others, in the greatest experiment ever conducted in the field of modern living.

Study Committees.

Its aim is to discover the type of house in which a family can live with the greatest comfort, least work and best health. The direction of this experiment rests primarily with the Ministry of Works, which even before the war ended set about the creation of 23 study committees to correlate and discover information on every aspect of building science.

The Operational Headquarters are at the Building Research Station, whose funds have been raised to four times the pre-war level for this purpose. The Station launched its programme two years ago with the construction of 15 groups of 10 houses each in different parts of Britain, where different ideas and designs could be tested systematically—various types of floor planning, materials, heating methods and so on. After preliminary tests by scientists the houses were to be occupied by families with children, each group having an official observer in one house to co-operate with other tenants in studying their homes and to pass on the comments to H.Q.

Report on Heating.

Now a first interim report on one section of this vast experiment has been published by the Department of Scientific and Industrial Research. It covers the first stage of the heating experiment, to which 20 houses using 19 different combinations of heating, cooking and water-heating systems, were devoted.

The 20th house contains the same appliances as one of the others in order to show the different conditions produced in the northern and southern houses of a semi-detached pair.

The houses are in three groups: first, a group of eight, in which the living room is heated by an open fire of traditional or modern design, and the kitchen by the warmth escaping from the cooker or hot water appliance, while the halls, bedrooms and bathroom are not directly heated at all. The second group of eight houses are partly heated throughout, often by convected (carried) warm air, each room having its own controls. The third group of four houses is fully heated by central heating.

The first phase of the trials—for which the houses were furnished but not inhabited—has now been completed. During this phase laboratory workers made regular tests, based on the typical routine of a family of four, in such matters as the frequency with which hot water was drawn, fires made up and so on.

Second Phase.

In the second phase, now begun, houses have been let unfurnished, and the same tests are being made by recording air temperatures in all the rooms, the rate of air movement through the houses, the quantity of hot water drawn, of the fuel used for each appliance, and so on. Every time any door or window is opened or closed the fact is automatically recorded.

The conclusions already reached by the first phase have demonstrated the importance of insulation, the fact that central heating proved cheapest when all the factors had been allowed for, and the fact that a gas or electric cooker in a centrally-heated house involves least work for the housewife: this combination required only 65 minutes per week for fetching the fuel, clearing out the boiler, and keeping the cooker clean, as compared with 205 minutes per week for the worst alternative tried.

The time required for dusting, cleaning and all the other household operations connected with a heating system, is now being recorded and analysed, every detail of the design of the appliances is being investigated, the performance of alternative fuels is studied, and the reaction of various materials.

Reducing Eyestrain.

In the same way the study of the behaviour of the human eye has led to lighting experiments, and recommendations have already been made as to the intensities of artificial lighting which involve least eyestrain at home. Standard tables have been drawn up assessing the lighting value of various types of window, the graph-plotting technique being used to determine the relation of design to the amount of daylight admitted.

In other experiments the Government-sponsored Council of Industrial Design has joined with leading architects and typical married couples in working out furnishing problems in relation to heating systems. In this way people of varying domestic habits, in the colder and the warmer parts of the country, in smoke-free and smoke-ridden towns, are joining with Britain's leading technologists in building up a fund of information about home life upon which the welfare of the community will centre more surely in the future than even in the past.

TENNESSEE VALLEY SCHEME

ITS GROWTH AND ITS LESSONS

Speaking in Hyderabad recently on the growth of the Tennessee Valley Scheme and its lessons for India, Dr. A. E. Morgan, the first Chairman of the Tennessee Valley Authority, said that the scheme did not start on a mature or coordinated plan. It grew out of adjustments from time to time, by blunders and constantly feeling their way through. About the time of World War I, the U.S. Government built the first large dam on the Tennessee River, the Wilson Dam. Before that almost all schemes were undertaken by private firms and even after the dam was built there was a good deal of argument about the wisdom of the State undertaking such a scheme and at one time, the Wilson Dam was almost sold to a private firm, but when President Roosevelt came to power and announced a general policy for river control projects, he laid down that all schemes for generating power should be undertaken by the Federal Government.

Dr. Morgan said that the first Board of three experts who took charge of the Tennessee Valley Scheme, each by his specialized interest, gave direction to it. One was responsible for the development and distribution of power. One who was interested in the agricultural aspect promoted the fertiliser projects. He, Dr. Morgan, was interested in its social application.

Dr. Morgan warned the planning authorities in India that there was a tendency in many quarters to think that the Tennessee Valley and other such schemes in the U.S.A. had been responsible for solving all the problems and ills. There was no wisdom in just copying the example of U.S. schemes, but they should take into consideration the special needs of their own people.

Pointing out some of the difficulties they had encountered in the various stages of the scheme out of which India might benefit, Dr. Morgan pointed out that a river project would involve a number of provinces or States and there should be a central unified control. He suggested that for this specific purpose, the territory through which the river passed might be made into a functional district for the specific purpose of river control, flood control or development of power, although it was not necessary to have Central control over general administration like irrigation or land development. Profiting by the example of the U.S.A., India would do well to legislate for functional unification of control side by side with the development of such projects.

WATER SUPPLY TO BOMBAY

Vaitarna-cum-Tansa Scheme.

"Bombay to-day needs a supply of 236 million gallons of water per day," according to a speech delivered by Mr. N. V. Modak at the Indian Institute of Architects, Bombay, recently.

The Vaitarna-cum-Tansa Scheme is being pursued for the augmentation of the city's water supply and tenders have been called for at the moment. A new dam is to be constructed at Vaitarna near Magalpada, some 10 miles from Khardi Station on the North-East section of the G.I.P. Railway, 65 miles distant from Bombay. It will impound 46,000 million gallons of water in the lake. Vaitarna is expected to impound the required quantity even in the scantiest years thus preventing any possibility of water scarcity in the city.

The Vaitarna dam will be a massive cement concrete structure of the gravity type, 1,700 feet long including 350 feet of spillway. The top of the dam will be 253 feet above the river-bed; this allows a 10 feet free board over the full supply level.

The top of the dam will be kept 28 feet wide including two parapet walls. The foundation of the dam will rest on the hard, impervious Deccan trap of the river-bed. Various factors such as shear and tensile stresses due to heat of hydration, friction between layers of concrete and concrete foundation, probable uplift due to pervious rock bed, etc., have been duly considered in designing the dam.

As the proposed dam will be the first all-concrete dam of its kind to be constructed in India, a special testing laboratory will be set up at the site to examine the various ingredients of the concrete as well as the concrete itself at various stages. The concrete for the dam will have a maximum water-cement ratio of 0.55 and the maximum size of aggregate will be 6 inches. Setting and shrinkage cracks will be avoided by limiting the temperature of the wet concrete to 80° F. by the addition of tube ice. Besides, there will be a special cooling plant at the site to cool down the concrete by circulating water at 35° to remove the heat of hydration while curing and setting. A specially designed batching plant will control the proportioning of the cement. As far as possible the concrete will be compacted with the aid of internal type vibrators. All forms to be used for casting the concrete will be of well-seasoned air-dried timber as it has been proved that absorbent forms are harder and more durable than non-absorbent ones

(Continued on page 18)

LAW REPORT

Calcutta High Court

Before Mr. Justice Majumdar.

The Governor-General of India in Council *v.* Bilash Singh.

Arbitration Act (X of 1940), sec. 8 (i) (c), (2)—Jurisdiction of the Court to appoint an umpire–Notice under section 8 (i) (c) (a) condition precedent.

The notice required by sub-sec. (1) (c) of sec. 8 of the Arbitration Act, 1943, is not a mere matter of procedure, but is the foundation of the Court's jurisdiction to appoint an umpire under sub-sec. (2) of that section.

The judge observed as follows: On or about 19th February 1944, Bilash Singh, a contractor, agreed with the Governor-General of India in Council representing the B.A. railway administration to perform certain works required by the said administration. The agreement contained an arbitration clause to the effect that in case of any dispute arising between the parties touching the various matters referred to therein (which are not material for purposes of this application) it will be referred to the decision of two arbitrators, one to be nominated by the railway and the other to be nominated by the contractor, or in the case of the said arbitrators not agreeing, to an umpire (to be appointed by the arbitrators in writing before proceeding with the reference) and the decision of the arbitrators, or in the event of their not agreeing, that of the umpire appointed by them shall be final and conclusive, and this condition shall be deemed to be submission to arbitration within the meaning of the Arbitration Act of 1899, or in statutory enactments or any modification, thereof for the time b eing in force.

Disputes having arisen between the parties, they were referred by agreement in writing, and in conformity with the said arbitration clause to two arbitrators appointed by the respective parties. The arbitrators proceeded with the reference, but did not appoint the umpire before proceeding with the reference, as they were required to do under the said arbitration clause. Some correspondence passed between the arbitrators, which show that they were unable to agree upon an umpire. They were, however, agreeable to have an umpire appointed by the Court. The respondent, Bilash Singh by his letter dated the 11th February 1946, addressed to the Deputy Chief Engineer, B.A. Railway was complaining that no application for the appointment of an umpire, which was proposed to have been made, was yet made. Thereupon the present notice of motion dated the 14th March, 1946, was taken out on behalf of the Governor-General in Council representing the B.A. railway administration, *inter alia*, for an order that a person be appointed umpire as to this Court may seem fit and proper. The application was admittedly one in which the intervention of the Court was sought for under sec. 8 sub-sec. (2) of the Indian Arbitration Act. It is also admitted that no notice contemplated by sec. 8, was given to the arbitrators. Sec. 8, sub-sec. (1), cl. (c) of the said Act provides that where the parties or the arbitrators are required to appointed an umpire and do not appoint him, any party may serve the other party or arbitrators, as the case may be, with a written notice to concur in the appointment or appointments or in supplying the vacancy.

Sec. 8, sub-sec. (2) states that if the appointment is not made within 15 clear days after the service of the said notice, the Court may on the application of the party, who gave the notice and after giving the other parties an opportunity of being heard, appoint an arbitrator or arbitrators or umpire, as the case may be, who shall have alike powers to act in the reference and to make an award, as if he or they had been appointed by consent of parties. The explanation of this sub-section is not relevant for the purpose of this application and I do not therefore mention it here.

The only question that is involved in this case is whether it would be competent for the Court to appoint an umpire on the application of the petitioner in the absence of any notice on the arbitrators as required by sec. 8, sub-sec. (1), cl. (c). It seems to me that the Arbitration Act was passed in order to give to the Court certain powers which the Court did not otherwise possess, one of such powers being power to appoint an umpire under sec. 8, sub-sec. (2) of the Act. Thus where the arbitrators would appoint an umpire, but could not concur in such an appointment, the section enable the Court to assist them by selection and appointment of an individual as an umpire. This seems to me to be a special jurisdiction conferred upon the Court and that jurisdiction can only be exercised if necessary conditions precedent required by the section have been fulfilled. The learnel d Counse appearing on behalf of the petitioner contended thatg iving notice is is merely a question of procedure and does not in any way affect the jurisdiction of the Court. I am unable to accept that contention. In my opinion to give jurisdiction to Court to act under the said section it is essential that as a condition precedent a notice should be given, and unless it is done the Court is not competent to appoint an umpire. In this view of the matter and in as much as the petitioner has failed to serve the required notice and apply to the Court in the manner laid down in sec. 8, sub-sec. (2) of the Arbitration Act, the Court has no authority to appoint an umpire.

The result is that the application should be dismissed. But having regard to the facts and circumstances of this case, I am not making an order as to costs. Each party will bear its own costs.

This judgement will govern the other cases also in which the same question arises.

RECENT ACTIVITIES

Institution of Engineers: 29th Annual Meeting.

"In no country and in no generation, did the engineer have such wonderful and virgin fields suddenly thrown open to him for the exercise of his initiative and creative genius," said Mr. A. N. Khosla, Chairman of the Central Water-power, Irrigation and Navigation Commission, addressing the 29th annual meeting of the Institution of Engineers, at Nagpur on 23rd January.

Mr. Khosla has been elected President of the Institution for the year 1949-50.

Pleading for early implementation of development plans in the country, he said: "Now there is danger of delay because of inflation, but inflation notwithstanding, we must proceed with our schemes of resources development.

The proper way to combat inflation would be, not to stop productive effort and thus permit human material to stagnate through lack of opportunity and incentive, but to freeze surplus purchasing power and to canalise it into means of production."

Institution of Engineers: Northern Centre.

"The work ahead for engineers is both fascinating and immense. It is work that is going to make India rich, prosperous, contented and powerful and the task calls for faith, courage, a spirit of self-sacrifice and character," said Mr. S. A. Gadkary, Chairman of the Northern Centre of the Institute of Engineers at its 32nd annual general meeting.

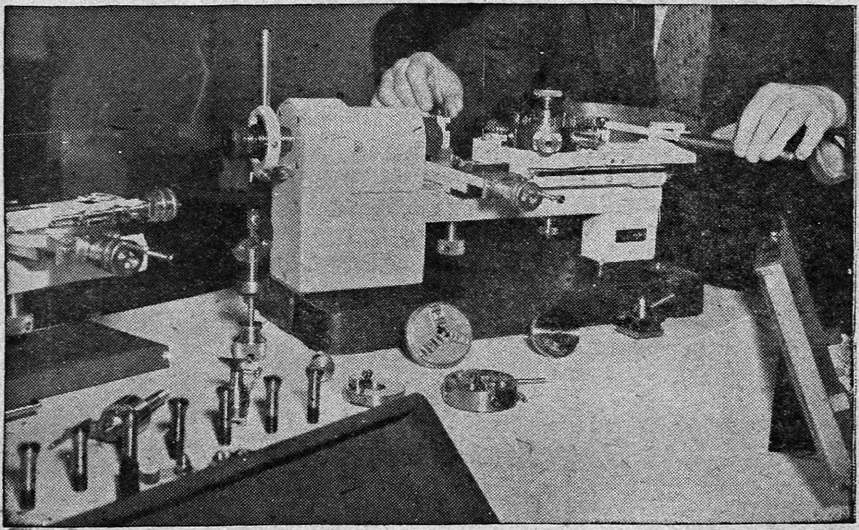
There was, he said, an urgent and pressing need of improving the economic conditions of the masses and it was here that the engineer would find his place in the national struggle for economic independence.

Mr. Gadkary added that the old Governmental system needed a suitable change for handling large projects, if they were to succeed in delivering the goods, with efficiency and within a reasonable time.

Institution of Engineers: Bombay Centre.

"The Institution of Engineers had a vital role to play in the advancement of engineering science and in the fulfilment of post-war programmes," observed Mr. G. D. Daftary, newly elected Chairman of the Bombay Centre of the Institution of Engineers, addressing the twenty-seventh annual session of the centre. The Hon'ble Mr. M. D. D. Gilder, Minister for Public Works, Bombay, inaugurated the session.

Confining his comments to Bombay Province, he spoke generally of the development schemes and said that the Institution could assist Government in finding solutions of difficult problems.



Machine Tool and Engineering Exhibition

The first Machine Tool Exhibition in London since 1935 was recently held at Olympia. A miniature Capstan Lathe used for fine precision work.

LETTER TO THE EDITOR

Scientific Pre-eminence of Nations.

SIR,—I have read with interest your scientific paper for some time and would like to make one criticism.

Engineering, Architecture, Construction, Design, are all scientific and require scrupulous accuracy. Your article, however, on page 13 (January 15th) titled "Scientific Pre-eminence of Nations," is not only incorrect but misleading.

The Germans do not top the list and should not be shown there. Neither is it correct to say "Germany has thus far and away ahead . . ."

Too much credit goes to the wrong places in this world and every scientific paper should strive to correct the deliberate inaccuracy in the political press and propaganda.

One often sees the big American papers trying to claim in advertisement and articles that they lead the world. A recent example was the "fluid fly wheel" claimed by several American Builders as the greatest revolutionary invention in American car industry since the war. Engineers, however, remember that Daimlers have had fluid flywheels fitted for some two decades.

Now to return to your article, if they are correct, then the order should be:

1.	Swedish	8.	Danes
2.	Swiss	9.	French
3.	Dutch	10.	Hungarians
4.	Germans	11.	Americans
5.	Austrians	12.	Italians
6.	British	13.	Indians
7.	Finns		

The Germans are 4th and the small nations who often get so easily overlooked are well to the top.

Yours faithfully,

G. W. C. GARROULD.

C/o Turner Hoare & Co. Ltd.,
Bombay.

We would point out that we have ourselves expressed the opinion that Holland, Switzerland and Sweden can each claim, relatively to their population, more Nobel prizes than any other nation. If, however, a champion cup is to be offered for the nation which has secured maximum marks we do not think our correspondent would disclaim in the name of Germans.—Ed.

TOWN PLANNING IN INDIA

The Bombay Town Planning Act 1915 was the first piece of legislation introduced in India on the subject of Town Planning. In 1918, Madras followed suit and now in the year 1949 the C.P. Government have prepared bills on Town Planning and Prevention of Ribbon Development. The U.P. Government is also thinking of introducing new legislation on Town Planning.

Although it is 33 years since the Bombay Town Planning Act was enacted, the advantages of its provisions have not been fully appreciated by several local authorities, let alone the public: and it takes nearly 8 years for a final Town Planning Scheme to be sanctioned by Government after the original date of declaration.

The Bombay Town Planning Act combines in its provisions the principles of betterment borrowed from the English Housing and Town Planning Act 1909 and the principle of redistribution borrowed from the German Act "Lex Adicks."

PERSONAL

Dr. J. L. Savage.

Dr. J. L. Savage, the American Expert on Dams, inspected on January 15, the sites in connection with the proposed Rs. 75-crore Krishna-Pennar Project about 40 miles from Kurnool Town.

Dr. James W. McBain.

Dr. James W. McBain, Professor of Chemistry at Stanford University U.S. since 1927, is expected to arrive in India very shortly on an initial four-week visit preparatory to taking up his duties as Director of the National Chemical Laboratory now under construction near Poona.

Dr. Mc Bain has published some 360 scientific papers on topics in the fields of colloidal and physical chemistry, a book, "the Absorption of Gases and Vapours by Solids," and a text book of colloid science. Hitherto he has served as external examiner for Indian universities.

Dr. B. R. Malhotra.

Dr. B. R. Malhotra, Chief Chemical Engineer and Metallurgist of the B.B. & C.I. Railway, has been elected President of the Engineering and Metallurgical Section of the Indian Science Congress.

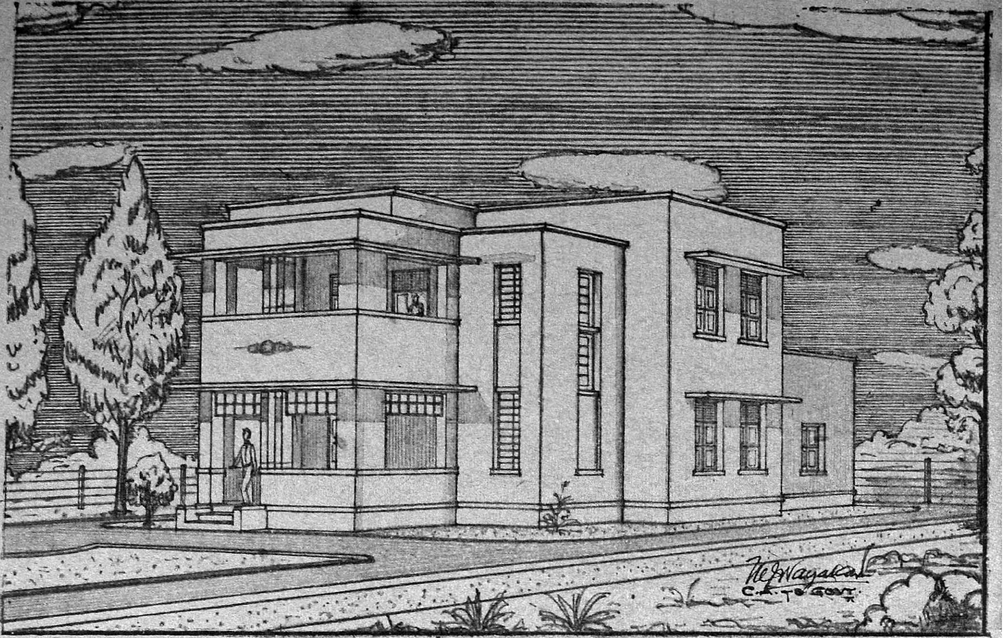
Mr. N. L. Deshmukh,

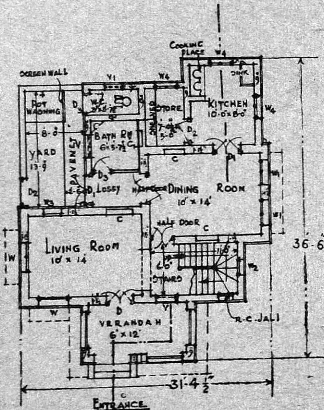
Mr. N. L. Deshmukh, A.M.I.E., Divisional Engineer, G.I.P. Railway, Bhusaval, was awarded the First Prize of the Institution of Engineers, Bombay Centre, for his paper "Economic Types of Water Softening Installations for Loco Boiler Feedwater."

OBITUARY

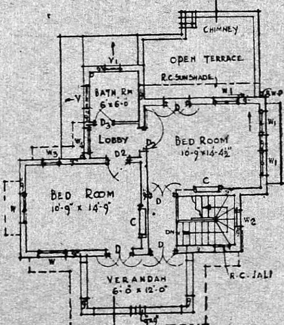
Mr. V. S. Thiruvengadasamy Mudaliar.

We regret to report the death, on January 8, of Mr. V. S. Thiruvengadasamy Mudaliar, at Madras after a brief illness. Mr. Mudaliar was a very well-known, and leading Contractor in Bangalore.





•GROUND• FLOOR• PLAN•



FIRST • FLOOR • PLAN•

Typical of the Middle Class House designed by N. Jumbulinga Nayakar, F.R.S.E., A.I.A.A., for the Co-operative Housing Society, Madras.

WOOD PRESERVATIVES

Wood preservatives may be divided into three main groups :—

1. Tar-oil Type, e.g., creosote ;

2. Water-Solution Type, e.g., sodium fluoride, zinc chloride, etc.,

3. Organic Solvent Type, e.g., copper napthenate in white spirit.

Tar-oil Type Preservatives.

Preservatives of this type are distillates from coal (or wood) tar. They are characterised by the following main properties :—

(*a*) They are very resistant to leaching and so particularly suitable for exterior use ;

(*b*) they are not as a rule corrosive to metals ;

(*c*) they are difficult to paint over and tend to "creep" in plaster ;

(*d*) they have a definite odour which, under certain conditions, may be picked up by foodstuffs which are near, even if not in actual contact with treated wood ;

(*e*) they are not readily inflammable at normal temperatures ;

(*f*) freshly treated timber is more inflammable than when untreated, but after a few months the volatile fractions of the oil evaporate and the fire hazard is greatly reduced. There is some evidence that creosoted timber is then no more inflammable than untreated wood. Unfortunately the evidence is not yet entirely conclusive.

Coal Tar Creosote.

More of this preservative is used in the U.K. than any other single type. Its principal advantages are its high toxicity to fungi, insects and marine borers, and its permanence due to the fact that it is insoluble in water. It is very slow to volatilize out of timber, because it consists of high boiling oils. Added to these essential technical qualities is the very important commercial consideration that it is readily available in large quantities of standardised quality at economic prices. These advantages have made creosote a well-known preservative for over a century.

Coal tar creosote is a distillate of coal tar which is itself a by-product of the carbonisation of coal. The quality of creosote is therefore liable to variation dependent upon the type of coal and the method of treatment and distillation of both coal and tar. This variation of quality has, however, been reduced within controllable limits by the adoption of very carefully worked out Standard Specifications which ensure that the chemical and physical properties essential for the efficient preservation of timber are present in the creosote covered by the respective Specifications.*

For this reason the advantages of insistence upon creosote conforming to Specification cannot be too strongly emphasised. Reliance should never be placed on the appearance of creosote only ; it should not be imagined, for instance, that the darker the colour the stronger the preservative.

A common fallacy with regard to creosote is that it waterproofs wood ; actually it has very little effect in this way (far less than petroleum oils), and depends for its efficiency as a preservative on its high toxicity.

Coal tar creosote is obtained during the distillation of coal tar between the boiling off of the light oils and the residue, which is pitch. It contains tar acids, bases, and hydrocarbons. Tar acids contain phenols, cresols, naphthols and xylenols in small quantities totalling about 6—8 per cent. of commonly used creosote. These acids are highly toxic to biological destructive agents. Tar bases include pyridines, quinolins, and acridines of which there are also about 2-2½ per cent. present, and which are equally toxic to the same agents. Hydro-carbons, which constitute the major part of industrial standard creosote, include benzene, toluene, xylene, naphthalene, fluorene and other substances. Of these, the naphthalene fraction, which means the hydrocarbons distilling below 235 degrees C., is usually specified to be not more than 25 per cent., and of this, half may be naphthalene.

Since creosote is so variable it is necessary to have a standard for an effective quality. This has been prepared for the U.K. in the British Standard No. 144-1936. The various types of creosote are divided into three groups, based mainly on their method of production and with no reference to their respective merits as wood preservatives.

* Specification normally in use in U.K. is the B.S.S. No. 144, 1936.

Type A: Oils heavier than water and naphthalene–containing especially suitable for marine work.

Type A2: Lower specific gravity than Type A. This group includes creosotes with higher (but limited) tar-acid content.

Type B: Creosotes produced in Scotland; similar to Type A2 but with no upper limit for the tar acid content.

Water-Gas Tar Creosote

This is creosote distilled from the residue derived from the carburetting of water-gas with petroleum oil. This type of creosote differs from ordinary coal-tar creosote in that it has less of the tar acids and bases but has a marked similarity in the hydrocarbons. Because of the low percentage of distillate obtained below 275 degrees C., this type of creosote is far less toxic than that derived from coal-tar. It is therefore sometimes mixed with coal-tar creosote, especially in America, instead of with petroleum. It is also used with zinc chloride solution in a two-phase pressure process, the water-gas tar creosote being impregnated last to act as a fixative layer to the water soluble salt.

Wood Tar Creosote

Not much is known about the preservative qualities of this substance because it has been produced in insufficient quantities to have had any extensive use. Of the softwood and hardwood tar creosotes the latter seems to be produced in greater quantity and more attention paid to its composition and quality. Its chief drawback is its degree of acidity in the form of formic and acetic acids which are true organic acids as opposed to the phenols of coal-tar creosote, and have a corrosive effect on metals. It is therefore essential to ensure a low percentage of acidity in the manufacture of wood-tar creosote before it can be used in ordinary commercial preserving plants.

Owing to the small quantity produced the form of creosote is not competitive in price with coal-tar creosote; also there is no standard quality.

Coal Tar

This is too viscous to penetrate wood more than to a very shallow extent, unless mixed with a solvent or spreader or used hot; it is also far less toxic than creosote, and is sometimes used when hot with creosoted wood-block paving so as to fill any gaps, assist in prevention of excessive mechanical wear, and prevent checking of the blocks under the variety of climatic conditions to which they may be subject. The tar on the surface also serves as a fixative to the top dressing of gravel or granite for roads. Some preserving organisations approve the admixture of 20 per cent. coal-tar to creosote for pressure treatment, and this would make a good preservative but for the tendency of the tar to "bleed" after installation. Inasmuch as it forms an almost impenetrable surface layer it does prevent leaching of the creosote.

Petroleum Oils

These oils have very little toxic effect on fungi, They are, however, used in India and America where there are large supplies at low cost, to dilute the more expensive creosote. They were first used on a large scale in India for treating sleepers, mixed with 50 per cent. creosote. Such mixtures have the advantage of possessing greater "water-proofing" qualities than creosote alone and so reducing splitting and warping of wood.

Waste Sump Oil

The waste oil from the sump of an engine's crank-case may be used as a diluent for creosote as mentioned above, Such chemicals as penta-chlorophenol and tetra-chlorophenol may also be dissolved in it to form a preservative. By itself sump oil has practically no fungicidal value.

By courtesy, T.D.A., London.

(*To be continued*)

BRITAIN'S HOUSING PROGRAMME

The total of new permanent houses completed since the programme started in April 1945 now stands at more than 406,000. In addition to permanent houses 63,000 temporary homes have also been built. The number of families in Britain for whom homes have been provided since the war now number about 843,000.

(*Continued from page 12*)

Water Supply to Bombay

such as steel shutters. The concrete mixture will be loaded in bottom dump buckets and carried by loco trains and finally dumped in position by means of ropeways or by cranes moving on a specially constructed bridge along the length of the dam.

Inspection galleries which will be provided at 40 ft. intervals along the face of the dam will help to locate the internal drainage pipes running alongside for periodical cleaning. It is proposed to install four radial type automatic gates, each 70 ft. by 20 ft. deep, over the crest spillway; also two under-sluices with two emergency gates in front of them.

A horseshoe shaped pressure tunnel, 10 ft. 6 in. in diameter and concrete lined with a bed slope of 1 ft. in 1 mile will convey the Vaitarna water into the Tansa Lake. A 96 in. diameter steel pipe at the Tansa end of the tunnel will supply water directly to the City under the full head of the Vaitarna Reservoir. This pipe will be laid beside the existing two 72 in. steel mains between Tansa and Powai. On its course to Tansa the tunnel line passes over the Balvant and Tasu Nallas and the connection will be effected by a steel pipeline of similar diameter supported on masonry bridges.

FLOORS FOR STORAGE OF FLOUR, GRAIN, OR SEED

The following is an abstract of notes from the *Building Research Station of England.

It has normally been the practice to construct floors for storage of flour, grain, or seed, in timber. The following alternative floor finishes for use on a solid base have been considered.

Concrete Floors.

Objections have been raised in the past to concrete floors for this purpose largely because of their coldness, which it has been suggested might tend to increase humidity near the floor and so cause deterioration of the stored material, or because of moisture rising through ground floors with the same result. Dustiness of concrete floors is also sometimes stated to be an objectionable feature. These objections can generally be overcome by suitable construction and treatment, as indicated briefly in the following paragraphs.

Insulation of Floors against Rising Moisture.

The penetration of moisture through concrete floors laid on the ground can be prevented by introducing between the base concrete and the surfacing concrete a suitable dampcoursing. This may be done by laying an asphalt dampcourse in the recognised manner. An alternative method developed during the war which has proved economical and satisfactory is to pour hot bitumen or hot soft pitch on to the base concrete and brush to form a continuous layer at least ⅛ in. thick, requiring about 5-6 gallons (50-60 lb.) per 100 sq. ft. Suitable materials are bitumen having a softening point (B. & R.) of 50-55° C. heated to a fluid consistency suitable for pouring and spreading by brush or squeegee. Fuming should not occur and a temperature of about 170° C. (338° F.) should not be exceeded when pitch is used. The surface of the base concrete for this type of damp-proof course should be reasonably smooth and dense.

The surfacing concrete or granolithic laid on this damp-proof course should have a thickness not less than 2 in. and should be laid in bays not exceeding 150 sq. ft. in area. The floor must be given adequate time for the surface concrete to dry completely before being used for storage purposes.

Surface Dusting and other Surface Deterioration.

Surface dusting of granolithic concrete can be avoided by proper choice of materials and good workmanship and preventive treatment can be given to floors which show a slight tendency to dust.

Asphalt or Pitch Mastic Floors.

Asphalt mastic floors have been successfully used for storage of grain, and the pitch mastic floor, which was introduced as a substitute for asphalt mastic during the war, should also be applicable for this purpose. So far as the available information goes no tainting of edible grain occurs when stored on either asphalt mastic or pitch mastic; no information is available regarding the possibility of tainting of floor stored directly on such floors.

This type of floor should be designed according to the severity of the traffic; where heavy trucking is likely to occur it may be necessary to embed cast iron or steel grids in the surfacing. These grids should have a mesh of about 2 in. diameter; a smaller mesh may lead to a slippery surface, while a coarser one may not protect the asphalt sufficiently from indentation.

Insulation against Heat Losses.

The heat loss through the solid ground floor of a warmed building is generally less than that through a ventilated wood board and joist floor; so that the average temperature of the floor surface is higher in the case of the solid floor. (In an unheated building the two types of floor will have the same average temperature.)

The thermal conductivity and thermal capacity of the solid floor are however much larger than those of the wooden floor; and the floor responds much less rapidly to changes of temperature in the air above it. This property gives rise to the feeling of cold when a concrete floor is touched by the hand or foot, and also to an increased risk of temporary condensation which may occur following a change in the weather.

In a warmed building, temporary condensation is never very frequent, and the risk cannot be large in a store in which the flour, grain or seed is stored loose over the entire floor, on account of the insulating effect of the stored material itself. It may be more serious where the material is stored in bags so that there is freer access of air to the floor surface, with possibly some part of the floor directly exposed. Where material is kept in bags or sacks and temporary condensation is found to be troublesome, it may be reduced by using, for the floor finish, some material which is fairly readily warmed (that is, one which does not feel cold), but apart from timber, it is difficult to choose a finish which combines this property with sufficient resistance to wear for trucking. Where the material is stored loose, the floor construction seems to be of little importance, and a solid floor is no less useful than a wooden floor.

* Crown Copyright reserved.

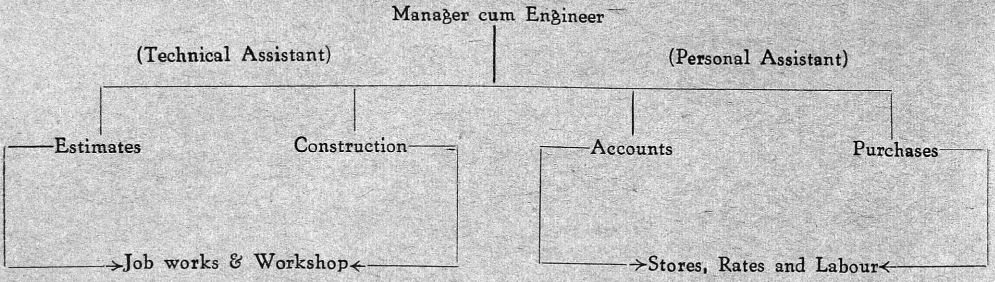
CONTRACTOR'S ORGANISATION AND THE ESTIMATING SECTION

N. MAHADEVAN, C.E.

A Contractor's organisation includes the Estimating Department, the Accounting Department, the Stores Department, and the Construction Department. The Estimating Department differs in different companies and its function depends upon the organisation and also upon the nature and magnitude of the contracts on hand.

The general structure of a typical contractor's organization in Ceylon with which the writer was associated is shown diagramatically below. The functions are exercised by one or many according to the particular firm and the amount of their commitments.

It is most essential that estimates be made and checked carefully, for the loss out of an omission is great and the resulting injury to the finance is very expensive.



A large number of organised companies have all their estimates checked since they are unwilling to assume the risk of serious mistakes which might be made if only one were responsible. Since no man is infallible these companies believe that every estimate should be the product of two brains. Some companies find that it is economical to have only trained men (Quantity Surveyors) responsible for this department of their organizations.

Every Estimator should be familiar with the methods of design. The estimators must understand why works are done in one way in one place and why altered conditions make a quite different practice successful in another locality. A knowledge of finance and accounting is of benefit to the estimator, although usually not very essential. He must also know by experience how much to allow for the details of construction. He must be able to determine the methods best adapted to a given structure in a given location.

The Designer knows 'why' and the constructor knows 'how'; the successful estimator will have to know both 'why and how'.

There should be real co-operation between the estimating and construction departments if the contractor's organization is to expand efficiently. Engineers at site often complain of lack of provisions in an estimate (especially in L. S. contracts) or some difficulties hindering the progress of actual execution, but rarely do these criticisms reach the source of the trouble. It would be to better advantage if managements arrange periodical meetings which would enable office assistants to meet the field assistants and understand each other's difficulties. Suggestions and constructive criticisms could thus be presented in such a manner that future trouble might be avoided.

Generally speaking a contract is not worth procuring unless a fair amount can be obtained for the work executed. For this end in view it is necessary that quite a number of works must be tendered for before striking on a suitable job.

When a new 'Invitation to Tender' is received by certain contractors who are not functioning in an organized way feel they are thoroughly able to take care of themselves and first enquire who the engineer is going to be in charge of the works on the employer's side. They have certain thumb rules to arrive at a round figure with which organized contractors find it incompatible. The latter on the contrary studies the general character of the structure, notes the time limit, and the security deposit amount, if any, pass it on to the estimator who can best handle it.

The estimator makes a careful study of the whole contract and jots down the important points and the method of procedure of the work. The first step is to study thoroughly the drawings and specifications so as to grasp the essential points and stipulations. The Bill of Quantities, if supplied along with the Tender Documents,

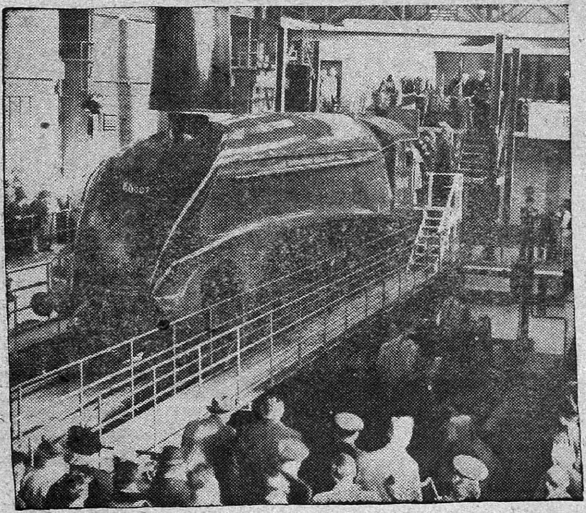
will indicate the various trades involved and a general idea of the materials required. The Tender Documents should be very carefully read from beginning to end without taking it for granted that the practice followed elsewhere will be followed in the work under review also. For employers certainly do not all receive contractors with open arms and minds. In general the estimator's first aim is to have all materials listed and sent out asking for quotations which will generally hold good for a period of one month despite the usual fluctuation at the market.

In certain classes of work it may become necessary to make small lay-outs or even to do the working drawing in order to determine the actual extent of the work. Later these details may become useful for similar works. These diagrams and details may become routine work which can be done by men of limited experience. The preliminary list of materials is sent to the Head of the Stores Department where the materials are summarised and the quotations asked for from Hardware dealers. The Stores Department carries the responsibility of the supply-prices, transport-charges, labour-rates and the like.

Oftentimes the employer or client has little conception of the hardware market and the contractors prepare alternative estimates from which to make selection of the substitute material offered.

Some contractors have their own Hardware shops, but most contractors procure their materials elsewhere. Few contractors carry a certain amount of materials in stock for immediate use. It is, however, imperative that all materials be ordered as soon as possible after a contract is made.

As soon as a contract is awarded an 'Information sheet' is to be prepared showing an exhaustive list of materials, tradesmen, tools and plants, drawing, and details and the principal terms of the contract. Any points to be cleared should be brought to the notice of those concerned. Any information necessary to enable the draftsmen to make detailed drawings must be sought.



A new locomotive testing station, which is claimed to be the most up-to-date in the world was recently opened at Rugby. One special feature, which has cost £200,000 (Rs. 26,00,000), is a roller bench on which engines can be driven up to 120 m.p.h while stationary. A locomotive "running" at speed during a demonstration.

The Stockyard is under the supervision of the Stores Department where the necessary materials are ordered to keep the Yard supplied with the desired amount of stock. In the Stores Department, it is determined whether an item shall be taken from stock or ordered from outside. Stock book is really useful, provided it is kept up to date.

A copy of the Order-sheet for materials and labour is retained by the Stores Department for use as a check-list on the actual issue of materials and the balance at site, and it also serves as a check on the estimator himself.

Facts and figures giving the rise and fall of the market prices are always of use. Progress reports are to be reviewed by estimate and data obtained for further use.

Some contractors are fully equipped while others have much of the miscellaneous work done elsewhere.

Change-slips should be sent to the Stores Department whenever there is a change in the Original Order either due to errors or to changes in designs. These slips are to be numbered consecutively and such changes should be reported at the earliest opportunity.

If works are simple and similar to other works the Estimators can make quite accurate estimates quickly, without even the complete designs based on plinth area or cube rate method.

Progress Charts are maintained by the Estimator so that he can keep the Chief of the Contract Department informed of what has been done, what is being done, and when and where a snag usually arises. He should keep separate files under different heads for each contract. All communications should pass through the hands of the Estimator who serves as an intermediary between the Accounting branch and the Expending branch of the general establishment.

The Estimator is assisted by detailers, computers, checkers and billers. The detailers take out quantities, the computers frame the Bill of Quantities and the checkers and billers give it the finishing touch.

COCONUT OIL AS FUEL

FOR INTERNAL COMBUSTION ENGINE

By preheating the coconut oil to a temperature of 120° F. it was possible for Mr. D. Mukherji, B.Sc., B. Eng. (Sheffield), A.M.I.E.E., A.M.I. Mech. E., Professor in Mechanical Engineering, at the Ceylon Technical College, to start an internal combustion engine without any difficulty whatsoever according to a paper read before the Ceylon Engineering Association during its last session.

The engine worked smoothly at full load and also at 5 per cent overload during 50 hours prolonged runs.

The coconut oil used as fuel was of commercial quality, having brownish colour and containing 1·2 per cent moisture content and 0.014 per cent suspended matter. Like most vegetable oils, the coconut oil used contains lower percentages of carbon and hydrogen than normally found in diesolene. Its calorific value was also lower than that of diesolene.

The maximum pressure attained in the case of diesolene is only 2.5 lb. per sq. in. higher than that in the case of coconut oil; whereas the delay period for both fuels happens to be about the same. As a result there was slightly greater "Diesel Knock" in the case of diesolene.

As far as the author is aware none of the previous workers on coconut oil has investigated its delay period and combustion process,

H/C Ratio of the Fuel

According to Dr. P. H. Schweitzer (1933 Penn. State College Tech. Bulletin, No. 16, P. 77) the H/C ratio can be correlated with the delay angle that is, a high H/C ratio fuel will give a shorter delay period, which means more rapid and generally smoother operation.

The H/C ratio of the coconut oil used is 0.159, whereas H/C ratio of diesolene and most mineral oils is usually less than this value. This may be one of the reasons for the author's experience for smoother running of the experimental engine with less "Diesel Knock" in the case of coconut oil than when diesolene was used. H/C ratio of coconut oil being higher than that of diesolene more complete combustion is likely to take place and evidently this compensates to a certain extent for the lower calorific value of this fuel.

Preheating is necessary in order to reduce the high viscosity of the fuel to suit the injection equipment. For 10 hours' run, the fuel consumption per b.h.p. (—hour), in the case of coconut oil is about 12 per cent greater than in the case of diesolene.

The use of coconut oil, however as fuel for Diesel engine is not a commercial proposition, because diesolene and other mineral oils are obtainable at much cheaper price.

Coconut oil may therefore be considered as a safe and substitute fuel for all slow speed Diesel engines.

ACOUSTICS*

N. M. McLACHLAN, D.Sc. (Eng.), M.I.E.E.

The new acoustics was a child of necessity, for its birth coincided with the greatest crisis in the history of the world. In 1916, when submarine attacks upon merchant fleet menaced food-supplies, the authorities deemed it desirable to commence scientific work on detecting the presence of these under-water craft. Sound was known to be emitted by a submarine, owing to the action of the rotating propeller. Therefore, if naval ships and those of the mercantile marine could be equipped with satisfactory listening devices, the submarine menace might be mitigated materially. Ingenuity, invention, and scientific deduction were the guiding stars in the wilderness of subaqueous acoustics.

About the end of 1915 the thermionic valve made its appearance. Shortly afterwards a supply of 'R' valves with hollow cylindrical anodes, spiral grids, and straight filaments was available. One or more stages were coupled together by ironcored transformers. Judged by present-day standards, these transformers are likely to excite visibility rather than admiration but that is frequently the case in technical work.

Perhaps the most suitable starting-point for our story is the beginning of broadcasting in 1922. In May of that year a transmitter was erected at Marconi House, London. It had the call-sign, afterwards world famous, Z.L.O. On one auspicious Saturday evening the first broadcast was given. Mr. R. H. White was in charge of the radio transmitter, whilst the author was responsible for the technical arrangements in the studio. This continued until the B B.C. was formed in November 1922.

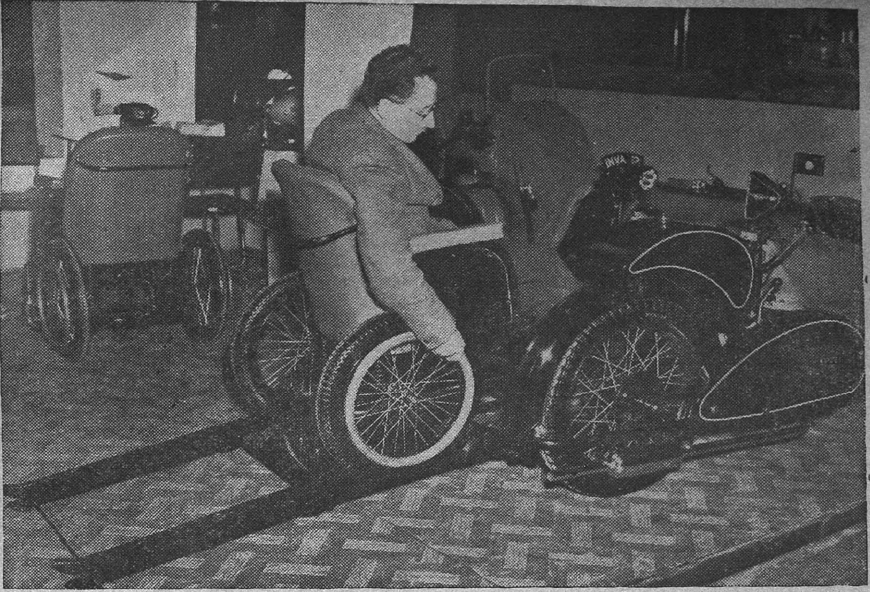
The main progress at the transmitting end—apart from improvements in valves and amplifier

(Continued in 2nd Column)

(Continued from 3rd Column)

design—was twofold. First of all it was soon recognized that a studio from which broadcasting emanated must be highly damped. An ordinary room was much too reverberant and 'echoey' to give the listener crisp speech at the receiving station. Thus research into studio treatment commenced, and it has progressed to such an extent that the acoustical properties of studios can now be estimated before building is undertaken; and these principles are now applied in the design of picture-theatres, picture-theatre studios, gramophone recording studios. and broadcasting studios.

* The New Acoustics by N. M. McLachlan, Rs. 6-2.



A Car for the Invalid

A lever operated by hand lowers two rails to free the Merlin chair from the motor propelled chassis. Invalids could get in and out of this new "Invacar" without any assistance.

Tailboard Goods Loader

This hydraulically operated tailboard, which also acts from ground level to the floor of the lorry, was shown at the Commercial Vehicle Transport Exhibition held recently at Earls Court, London. It takes up to 1,500 lbs., is operated by the touch of a lever, and when loading is complete, shuts easily like a normal tail board. The tailboard loader is here seen level with the floor of the lorry for easy loadings.

INDIAN INSTITUTE OF SCIENCE

REVIEWING COMMITTEE'S REPORT

Engineer or Scientist to be Chairman

The Quinquennial Reviewing Committee of the Indian Institute of Science has, after a thorough examination of the affairs of the Institute, submitted its report to the Government of India, making recommendations of a far-reaching nature, intended to make the Institute function more on the lines laid down by the founder and to raise the Institute to the level of European research institutions.

The Chairman of the Committee is Sir Alfred Egerton and Sir Ben Lockspeiser, Chief Scientist to the British Ministry of Supplies, and Dr. J. M. Mukherjee, Director of the Council of Agricultural Research, India, are members.

Foremost among the recommendations of the Committee is that the Director of the premier research institute in India should be an eminent scientist or an engineer, even for short-term vacancies. At present the Director of the Institute is a civilian of the Mysore Government, without any standing in the scientific world.

In accordance with this recommendation the Governing Council of the Institute advertised for the post of Director, offering Rs. 3,000 as the monthly salary and calling for applications from eminent scientists. It is gathered that a few eminent German and French scientists have applied for the post.

Governing Council

Another recommendation emphasises that the Governing Council of the institute should be only an advisory body, that a minimum of two-thirds of the total strength of the Governing Council should be scientists and that the chairman should also be an eminent scientist. Hitherto the Governing Council was the chief executive body administering the Institute and consisted of a large number of laymen and for some time, one of the British Residents in Mysore was the chairman; latterly prominent members of the Governing Council, not necessarily scientists, occupied the chair.

The Reviewing Committee has also suggested that the existing scales of salaries to professors and lecturers and other research staff should be made more attractive for scientists to fill those places. The Committee has found that at present the work at the Institute is not of a high research standard and if the Institute should be run as at present, the Committee feels that the Institute would reduce itself to a mere technological institute and its research purposes would not be fulfilled. Therefore, there is the urgent need to reorganise the Institute with a view to making it a real research institute of the first magnitude as it was intended to be.

It may be recalled that Pandit Nehru, when he recently visited the Institute, observed that the work of the Institute was poor, both in quality and quantity, and needed much to be improved.

"Too Much of Politics"

Further, it is gathered that the Reviewing Committee has noticed that there is too much of politics in the Institute and, unequivocally disapproving of it, has urged that a pure atmosphere of research should be developed and that greater co-operation and co-ordination and goodwill among the departments and the staff should be promoted.

It has also recommended the provision of more amenities for extra-curricular activities for research workers in the Institute, rendering them free of financial and other worries.

The report, it is gathered, is now with the Government of India, who are considering the recommendations.

"SHERARDIZING"

A considerable amount of information regarding "Sherardizing" is given in a small booklet by G. Petrie and J. C. Mills and issued by Zinc Alloy Rust-Proofing Co. Ltd., Shakespeare Street, Wolverhampton.

The process was evolved as far back as 1900 by Mr. Sherard Cowper-Coles. He found that when various articles were packed in zinc powder and heated, a rust-proof surface was obtained. He patented the method giving it the name of "Sherardizing".

This process is now considered as a valuable method of rust prevention. In the booklet mentioned, the authors give a detailed description of "Sherardizing" and how it is carried out, and also suggests suitable articles for treatment.

Dealing with the limitations of "Sherardizing" the authors point out that "Zinc Coatings in any form on ferrous metals are of little use by themselves as a protection against dilute acid solutions or acid fumes", though it is stated that advantages are found with a "Sherardized" surface as it forms a good foundation for a further layer of protective paint or bitumen, which can be applied immediately to "Sherardized" surface. Then, again, "Sherardizing" by itself cannot "resist the corrosive action set up by stationary water". Other points are raised, but one only need be referred to here, namely, that soldered work cannot be "Sherardized".

SPECIFICATION

Cold-Setting Casein Glue for Wood

The British Standards Institution has just issued B.S. 1444, Cold-Setting Casein Glue for Wood, which supersedes B.S. 4. V. 2. Casein Glue for Aircraft purposes. Casein glue has a limited degree of water resistance, but there are certain usages for which this property is not required. The standard, therefore, provides for types of glues which have this limited degree of water resistance and for other types for which no water resistance performance is claimed. Tests are laid down for both types.

The publication of this standard renders unnecessary the casein glue section of B.S. 745, Joiners glue. A revision of the latter is now in hand and the casein glue section will be omitted from it.

Copies of this standard can be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W. 1, price 2/- post free.

Asbestos cement soil, waste and ventilating pipes and fittings

This British Standard has been revised and now includes a range of pipes and fittings, for use as soil pipes and for similar purposes. The dimensions of these have been completely standardized so that pipes and fittings supplied by different manufacturers will be interchangeable and uniform in appearance. The standard includes requirements for the quality of pipes and fittings and recommendations for the methods of jointing and fixing.

Amongst the fittings included is a series of connectors for use with W.C. pans with the usual types of traps.

Copies of the revised standard may be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W. 1, price 4/- post free.

Amendment No. 1. to B.S. 1212—Ball Valves

("Portsmouth" Type), (P.D. 831.)

Although the specification as originally issued included ⅜ in. and ½ in. sizes of ball valve, the total projection from the face of the fixed backnut (which abuts on the inside face of the cistern shell) was too long for valves to be fitted into cast-iron well-bottom flushing cisterns (commonly known as "Burlington" cisterns). The effect of the amendment is to limit the total projection so as to overcome this difficulty. The necessary alterations, together with those consequent upon this change, are tabulated.

A minor change also effected is the substitution of hard rubber joint rings for leather joint rings as some qualities of leather have been found to be unsuitable for this purpose.

Copies of the Amendment may be obtained gratis from the British Standards Institution, Sales Department, 24, Victoria Street, S.W. 1, under reference P.D. 831.

BOOKS RECEIVED

A Text Book of Building Construction—By G. J. Kulkarni, B.E., A.M.I.C.E., M.R.S.I., A.M.I.E., A.M.I. Struct. E. (Published by the author at B. V. B. Polytechnic, Hubli). Price Rs. 18-8-0.

Better and Cheaper Highway Bridges—By Dr. S. Kamesam, Hon. D.Sc., B.E., M.E. (Hons.), M.I.E. Published by The Century Wood Industries & Co., 4, Miller Road, Bangalore. Price Rs. 6.

Overhead Electrical Wood Pole Structures in India—By Dr. S. Kamesam, Hon. D.Sc., B.E., M.E. Hons., M.I.E. (Published by The Century Wood Industries & Co., 4, Miller Road, Bangalore.) Price Rs. 2-8-0.

"SPARTAN SPARSEAL"

On page 19 in the last issue of *The Building Gazette*, we had the pleasure in commenting on Spartan Sparseal, an excellent sealer for cement and plaster walls.

Messrs. Addisons Paints and Chemicals Limited, P.B. No. 308, Madras, the manufacturers of Spartan Hardiproof (Wood preservative and rot proofing agent) are also the manufacturers of Spartan Sparseal. Any orders and enquiries may please be sent to Messrs. Addisons Paints and Chemicals Limited, Mount Road, Madras.

USE THE

BUILDING CENTRE

FREE

1/11, MUKKER NALLAMUTHU STREET, G.T., MADRAS.

CONTRACTS OPEN

The dates at head of paragraphs are those for the submission of Tenders. Application for forms and particulars should be made to the address given at the end.

LONAVLA : Renovations.

February 17.—Renewing doors and windows, roof timber and A.C. sheets at "H.M.I.S. Shivaji", at Lonavla. Estimated cost Rs. 13 lakhs. The Chief Engineer, Southern Command, Poona.

SURAT : Cooling Tower.

February 21.—Erection of Cooling Tower for the Steam Power House near Surat for the Electric Grid Department, Bombay. The Electrical Commissioner, Bombay.

TIRUCHENDUR : Decoration.

February 21.—Painting 9 tiers of the Rajagopuram of Sri Subramaniaswamy Temple at Tiruchendur. The Executive Officer, Sri Subramaniaswamy Devasthanam, Tiruchendur.

MADRAS : Chlorinator.

February 23.—Supply of a Portable Chlorinating Plant for the Water Works Department. The Commissioner, City Corporation, Madras.

MOKAMEH : Quarters.

February 24.—Constructing 200 units of temporary Quarters at Mokameh Jn., E.I. Railway. The Engineer-in-Chief, Ganga Bridge Project, Mokameh.

MIHIJAM : Quarters.

February 24.—Construction of Officer and Senior Type Houses at Sundar Pahari West Colony at Mihijam. The Engineer-in-Chief, Loco Building Works Project, Mihijam.

NAGPUR : Medical College.

February 24.—Construction of kitchen block attached to the Medical College at Nagpur. Estimated cost Rs. 2,45,553. The Superintending Engineer, Project Circle, P.W.D., Nagpur.

CALICUT : Concrete Roads.

February 25.—Cement Concreting Madras-Calicut Road, miles 443/0 to 444/7 within Calicut Municipal limits. The Divisional Engineer, Highways, Calicut.

SALEM : Concrete Roads.

February 25.—Cement concreting Salem-Cuddalore Road 2/6 to 5/2 and Sankari-Tiruchengode Road 1/7 to 7/1. Estimated cost Rs. 2,30,000 and Rs. 2,78,000 respectively. The Divisional Engineer, Highways, South Division, Salem.

NELLORE : Quarters.

February 28.—Construction of 18 blocks of Staff Quarters at Nellore Power Station. The Superintending Engineer, General Construction Circle, 157, Mount Road, Madras.

GORAKHPUR : Transmission Lines.

February 28.—Erection of 57 miles of 11 KV main line, Basti-Gorakhpur-Charichaura. Estimated cost Rs. 65,000. The Executive Engineer, Hydro-Electric Division, Gorakhpur.

HOSPET : Canal Excavation.

March 1.—Excavating low level canal for the T.B. Project. The Executive Engineer, T.B.P., Canals Division, Hospet.

JULLUNDER : Insulators.

March 7.—Supply of 13,000 Nos. Insulators 11 and 13-KV. The Executive Engineer, Stores Division, P.W.D., Electricity Branch, Jullunder.

BOMBAY : Water Supply.

March 18.—Construction of a Cement Concrete Dam across the River Vaitarna. The dam will be about 1,700 ft. long and about 250 ft. high. The Special Engineer, Bombay Municipality, Bombay.

HYDERABAD : Electric Pumps.

March 31.—Supply and erection of 10 units of electric driven pumps complete with motors and necessary accessories each capable of delivering 225 c. ft. per second at a gross head of 65 feet. The Superintending Engineer, P.W.D. Investigation Circle, Barkatpura, Hyderabad-Dn.

RESULTS OF TENDERS

Closed December 10.—Construction of Ministerial Staff Quarters at Nagpur:—*Tenders have been rejected, and fresh tenders are invited.*

Closed November 17.—Construction of Quarters for Civil Aviation Staff at Palam Aerodrome:—*Tenders were rejected.*

Closed November 16.—Filtration Plant at Kalyan for G.I.P. Railway:—*Only one tender was received and the same has been rejected.*

Closed October 25.—Construction of Store Shed and Compound wall for S.D.O.'s Quarters at Ahmedabad:—*Awarded to New Era Construction Co. of Ahmedabad.*

Closed October 25.—Yamuna Hydro-Electric Scheme: Earthwork in the embankment of Power Channel:—*Awarded to Hind Construction Co. of Calcutta for Rs. 12,38,894.*

Closed October 22.—Construction of 88 units A type Quarters

(Continued on page 28)

HOW WAS MARCH 1948

For Building

Rainfall in inches.

Ahmedabad	0.1
Ahmednagar	0.0
Alleppey	3.9
Ambala	1.1
Aurangabad	0·1
Bangalore	0·0
Baroda	0.0
Belgaum	0.0
Bellary	0.0
Benares	0.2
Bhopal	0:0
Bombay	0.0
Calcutta	4.7
Cocanada	0.0
Cochin	3.3
Colombo	1.6
Cuttack	1.6
Darjeeling	2.7
Dehra Dun	3.4
Delhi	0.8
Gaya	...
Gulbarga	...
Hanamkonda	...
Honavar	...
Hyderabad (Dn.)	0.0
Hyderabad (Sind)	...
Jamshedpur	2.2
Kodaikanal	1.4
Kurnool	0.2
Madras	0.0
Madura	0.0
Mahabaleshwar	1.4
Mangalore	1.4
Mercara	0.6
Multan	0.4
Masulipatam	0·1
Mysore	0.5
Nellore	...
Negapatam	...
Ootacamund	0.0
Palghat	...
Poona	0.2
Raichur	0.6
Rajkot	0.0
Ranchi	1.1
Shillong	...
Sholapur	0.5
Surat	0.0
Trichinopoly	0.3
Trivandrum	2.1
Vizagapatam	0.1

FOR DISCUSSION

To be strong, we must work. To be happy, we must be kind. To be wise, we must look and think.—Ruskin.

At present technical talent is grossly misemployed in India.

Public service, incompetently managed, will be blundering, dilatory, corrupt, cowardly, and myopic and will not always stand comparison with private enterprise in spite of its immensely larger resources.—G. B. Shaw.

If a rich man is proud of his wealth he should not be praised until it is known how he employs it.—Socrates.

In Britain, according to British Council figures, 42 per cent of students receive some form of scholarship or grant.

What India needs urgently today are creative and constructive thinkers with ability to relate learning to environment and to put their education to purposeful use.

Our Ministers are of the people, from the people. Let them not arrogate to themselves greater knowledge than those experienced men who do not happen to occupy ministerial chairs.—Mahatma Gandhi.

India would be one of the greatest powers in the world for good within the next fifty years.

Knowledge is capable of being its own end. Such is the constitution of the human mind, that any kind of knowledge, if it be really such, is its own reward.—Cardinal Newman.

PROPOSED NEW WORKS

Bombay: The Bombay Corporation has approved of a scheme for the construction as a first instalment of 412 tenements including ten shops at an estimated cost of Rs. 11.73 lakhs. 160 of these tenements would be constructed at Haines Road, and the remaining at Sewri.

E. P. Capital: The East Punjab cabinet at a meeting held on January 26 has finally approved the Rs. 17½ crore scheme for the construction of new capital at Chandigarh for the province. As a result of this decision construction of an administative colony to house various departments and their staff will be immediately taken in hand.

E. I. Railway: The Railway Board have sanctioned a survey to be conducted by the E. I. Railway Administration for construction of a railway line on the broad-gauge from Chopan to Mirzapur via Robertsganj in continuation of the previously sanctioned survey for a line between Pipri and Chopan.

Macchu Dam: The work of constructing a dam across the river Macchu near Jalsikha has begun. This is one of the five major irrigation works sanctioned in Sourashtra and its foundation-stone was laid by the Governor-General of India during his last visit. The project is estimated to cost Rs. 60 lakhs.

Madras: Detailed estimates for the extension of the electric train service from Tambaram to Chingleput, a distance of 25 miles, have been submitted by the South Indian Railway to the Railway Board. The scheme is expected to cost Rs. 150 lakhs.

Nasik: The Central Government has prepared a scheme costing Rs. 2½ crores to develop Nasik into the one of the adjuncts to the Capital. Among others this will provide buildings to house the Central Irrigation Commission and the Central Electricity Commission, as well as quarters for their staff of 2,100. A new amenity in the area will be a hospital to be set up on a plot of 25 acres of land.

EDUCATIONAL

THE SCHOOL OF GAS TURBINE TECHNOLOGY

The School of Gas Turbine Technology at Ladywood, Lutterworth, near Rugby, England, seeks, through special technical courses to further knowledge of gas turbine technology and so to help forward the building of a British gas turbine industry.

Its courses are divided into four distinct categories—industrial, aero-engine, draughtsmen's, and international.

The International course, which occupies three weeks is extremely popular, combining as it does the industrial and aero-engine syllabuses. It covers the basic theory and practical testing of gas turbines, with lectures by specialists on subjects such as fuel technology, combustion components, metallurgy, etc.

One of the most valuable features of the curriculum is the attendance of "outside" lecturers who pass on the benefits of their own practical experience.

The student's age range up to 65.

A variety of criticisms and suggestions are proffered at the end of each course, and the opinions expressed help to mould future policy.

The school's history began in 1943, when it was used as a training groundfor Dominions personnel. Its whole attention in the early days was directed to the aero-engine industry and the war effort. It was scheduled for closure at the end of the war, but it had proved its worth. So the work goes on.

Today it has three main purposes—to promote gas turbine knowledge among qualified engineers who will manufacture, to stimulate the demand for gas turbine technology among potential users, and to inculcate among the countries of the world some idea of gas turbine technology.

The school is controlled by The Power Jets (Research and Development) Limited, and its executive director is also the executive director of the school.

PROFESSIONAL

Membership and Associate Membership of the International Corporation of Engineers Inc. U.S.A. open to Scientists and Engineers in responsible position. Apply to Secretary, I.C.E., Dhanaula Nabha, E. P.

(Continued from page 26)

at Domohini :—(1) *Main building at Rs. 6-4-0 per sq. ft. of plinth area awarded to Biswanath Singh & Co.* (2) *Aqua Privy at Rs. 6-10-0 per sq. ft. of plinth area awarded to Jewan Singh & Co.*, (3) *Earthwork at Rs. 30 per 1,000 c. ft. awarded to G. L. Kapur*, (4) *Other items 300% above Bengal Assam Railway's Schedule of Rates."*

Closed October 21.— Supply of bricks for Calcutta P.W.D. stacked at site :—*Contract split up and awarded to Malhotra Bros. for 15 lakhs and U. N. Paul for 14 lakhs at Rs. 63 per 1,000.*

•

Closed September 24.—Asphalting Roads in Ahmednagar for the City Municipality :—*Awarded to the Hindustan Construction Co., Ltd., Ballard Estate, Bombay.*

Are you interested in

TOWN PLANNING?

THE

SCHOOL OF PLANNING

is now able to offer to

PROFESSIONAL MEN

IN

INDIA

the opportunity of studying by correspondence for the external Intermediate and Final Examinations of the Town Planning Institute.

The fee for the whole Course, including text-books, tuition and criticism,

is £20 sterling

Applications for further particulars and enrolment form should be sent to :—

The Secretary

SCHOOL OF PLANNING

35, Gordon Square,

LONDON, W.C. 1.

BOOKS ON ENGINEERING, ARCHITECTURE & TOWN PLANNING

Prices include postage. Add As. 3-6 with your order for registered post. No V.P.P. Write for your copy to The Building Gazette, Post Box 288, G.T., Madras.

O-SERIES

	Rs.	A.	P.
Building Today by M. S. Briggs ...	6	3	0
Railway Today by J. W. Williamson ...	6	3	0
Architecture by Martin S. Briggs ...	4	3	0
Architecture by C. Batley (Oxford Pamphlet) ...	0	7	0
Slide Rule Calculations by H. O. Cooper...	7	0	0
Constructional Steelwork Simply Explained by O. Faber ...	4	14	0
Simple Examples of Reinforced Concrete by O. Faber ...	4	15	0
Reinforced Concrete Simply Explained by O. Faber ...	4	15	0
New Acoustics by N. W. McLachlan ...	6	2	0
Iron and Steel Today by J. Dearden ...	6	3	0
What is Wrong With Your Factory—Office or Works? by W. A. Melhuish...	12	0	0
The Practical Engineer Pocket Book, 1948 ...	4	4	0
Elementary Surveying by John Malcolm	5	8	0
Elementary Theory of Gas Turbines and Jet Propulsion by J. G. Keenan ...	12	4	0
Architecture—Rotary Guide to Careers.	0	10	0
Our Enemy the Termite by T. E. Snyder (1948 Edition) ...	17	7	0
Mosquito Control by William B. Herms and Harold F. Gray ...	13	4	0
Mosquito Reduction and Malarial Prevention by J. A. Crawford and B. S. Chalam ...	3	12	0

OL-SERIES

	Rs.	A.	P.
Workshop Sense by Chapman ...	1	11	0
Alternating Currents by Clayton ...	11	2	0
Reinforced Concrete Design by Manning, 2nd Edition, 1945 ...	21	5	0
Introduction to Wireless by Pearce ...	6	12	0
Heat Engines by Low ...	15	1	0
Geology for Engineers by Sorsbie ...	11	0	0
Sea Surveys by Edgell ...	1	10	0
American at Work Series—The Electrical Industry by Perry ...	9	12	0
American at Work Series— The Plastics Industry by Perry ...	9	12	0
Electro-Acoustics by Meyer ...	8	14	0
Architecture in England by Summerson...	2	0	0
Practical Engineering Problems and their Solution by Higgs ...	1	3	0
Building Construction by McKay, Vols. 1, 2 and 3, each ...	8	1	0
Structural Engineering by Cassie ...	14	2	0
Theory of Structures by Morley ...	14	2	0
Building Quantities by Anderson ...	6	15	0
Britain and Her Buildings by Kirkman ...	2	10	0
Strength of Materials by Morley ...	14	1	0
Plumbing by Winder ...	6	12	0
Men at Work (Industrial Psychology in the Factory) by Oakley ...	7	8	0
Civil Engineering for the Clerk of Works by Vernon C. Whiting and K. Mills ...	11	3	0
Practical Design of Simple Steel Structures, Vol. I, by David S. Stewart ...	13	3	0
Road Aggregates-Their Uses and testing by B. H. and R. G. Knight (Second Edition 1948) ...	21	5	0
Builders' Materials by Bernard K. Knight and Rena G. Knight (Second Edition 1948).	18	1	0
Vibration Problems in Engineering by S. Timoshenko (Second Edition) ...	31	8	0
Problems in Electrical Engineering by S. Parker Smith (Fifth Edition 1948) ...	9	0	0
Design for Welding in Mechanical Engineering by F. Koenigsberger (1948 Edition) ...	15	12	0
Fluid Mechanics by R. C. Binder (Eighth Printing, 1947) ...	29	2	0
Highway Surveying and Setting Out by B. G. Manton (1948 Edition) ...	23	12	0

M-SERIES

	Rs.	A.	P.
Building Construction for Beginners by Relly ...	5	14	0
Experimental Building Science by Mason ...	5	8	0

H-SERIES

	Rs.	A.	P.
Soil Mechanics by Krynine: McGraw-Hill publication ...	23	2	0
Steel and Timber Structures by Hool and Kinnie: McGraw-Hill publication ...	27	4	0
Fowlers' Mechanical Engineers' Pocket Book, 1948 ...	4	4	0
Fowlers' Mechanics' and Machinists' Pocket Book, 1948 ...	3	4	0
Television Receiving Equipment by W. T. Cocking ...	12	8	0
Painter & Decorator (Audel's) ...	9	4	0
Drawing & Design (Audel's) ...	9	4	0
Automobile Guide ...	17	8	0
Blue Print Reading ...	9	4	0
Welders' Guide ...	4	12	0

CURRENT WAGES FOR MEASURED WORK

- **Prices shown below are for sub-contract work, Labour only, for an average job in Madras.**
- **Labour includes use of craftsmen's and artisan's tools only.**

	Rs.	A.	P.
EXCAVATOR			
Excavating trenches for foundation per 100 c. ft.	20	0	0
CONCRETOR			
Mass cement concrete any position laid and rammed per 100 c. ft.	20	0	0
R.C.C. band-course over plinth 4" thick any position and watering per 100 sq. ft.	15	0	0
R.C.C. slab 6" thick laid any position and watering per 100 sq. ft.	15	0	0
R.C.C. lintel cast *in situ* average size per R. ft.	0	6	0
R.C.C. sunshade 3" thick any position and watering per 100 sq. ft.	10	0	0
Granolithic floor 1¼" thick laid and finished smooth per 100 sq. ft.	10	0	0
Brick-jelly concrete 4½" thick laid and rammed per 100 sq. ft.	8	0	0
BRICKLAYER			
Ground-floor superstructure 9" wall per 100 c. ft.	17	0	0
Do. 13½" wall per 100 c. ft.	16	0	0
First-floor superstructure 9" wall per 100 c. ft.	17	0	0
Do. 13½" wall per 100 c. ft.	18	0	0
Brick nogging in cement mortar per 100 sq. ft.	6	0	0
Half-brick wall in cement mortar per 100 sq. ft.	8	0	0
Floor rendering ½" thick in cement mortar per 100 sq. ft.	6	0	0
Do. but finished in coloured cement per 100 sq. ft.	10	0	0
Grinding lime mortar or pounding same per 100 c. ft.	10	0	0
Open terrace levelling course in brick jelly lime concrete and rawing per 100 sq. ft.	10	0	0
Open terrace flat tiles two courses per 100 sq. ft.	10	0	0
Open terrace flat tiles pointing per 100 sq. ft.	4	0	0
CARPENTER			
Panelled doors including housing shutters per sq. ft.	1	2	0
Glazed doors do. per sq. ft.	0	15	0
Panelled windows do. and cutting and fixing guard bars per sq. ft.	1	6	0
Glazed windows do. per sq. ft.	1	3	0
Glazed shutters only per sq. ft.	0	15	0
Fixing only door or window frames per each	1	0	0
Centering to R.C.C. slabs per 100 sq. ft.	13	0	0
Do. to R.C.C. stairs per 100 sq. ft.	16	0	0
Do. to R.C.C. sunshades per 100 sq. ft.	15	0	0
Wood work in scantlings per c. ft.	3	0	0
IRONWORKER			
Bending and fixing M.S. Reinforcements for R.C.C. work per cwt.	6	8	0
PLASTERER			
Wall-plastering in cement per 100 sq. ft.	6	0	0
Ceiling—plastering per 100 sq. ft.	6	8	0
Sunshade—plastering per 100 sq. ft.	7	0	0
Rounding internal or external angles per R. ft.	0	1	0
Moulding not exceeding 9" girth per R. ft.	0	8	0
White or colour washing 1st coat per 100 sq. ft.	0	10	0
Do. 2nd coat per 100 sq. ft.	0	8	0
Do. 3rd coat per 100 sq. ft.	0	7	0
GLAZIER			
Fixing only glass panes in window sashes per sq. ft.	0	2	0
Do. if cutting is necessary per sq. ft.	0	2	9
PAINTER			
Painting on wood or iron 1st coat per 100 sq. ft.	1	0	0
Do. 2nd coat per 100 sq. ft.	0	14	0
Do. 3rd coat per 100 sq. ft.	0	12	0
Do. if in narrow widths add 16 % extra.			
Tarring to door or window frames per 100 sq. ft.	0	8	0
SUNDRIES			
Fixing only round rain water pipes per R. ft.	0	4	0
Casting and fixing R.C.C. slabs for shelfs per sq. ft.	0	6	0
Fixing welded fabrics including cutting per sq. ft.	0	10	0

Note:—1. Water to be supplied at spot.
2. Scaffolding extra.
3. Setting-outs and making good extra.

PLAN YOUR BUILDINGS

through your Architect—

★

E. GIBSON,

15, Md. Hussain Street, Narasingapuram,
Mount Road, MADRAS.

HINDUSTAN CERAMIC & TILE WORKS LIMITED

ALWAYE—TRAVANCORE.

Manufacturers of High Class Roofing Tiles, Ceiling Tiles, Flooring Tiles, Wirecut Bricks, Stoneware Pipes, Sanitary Fittings and other allied products.

WANTED STOCKISTS AND DISTRIBUTORS

C. E. SIMON, B.A.,
Managing Director.

HYDES

AUTOMATIC PUNCTURE SEALER

For sealing any number of punctures on cycles, motor cycles and cars, automatically, without removing tyres or tubes.

Sole Importer :

T. A. RAMA RAO,
'NARMADA'
39, Lingha Chetty Street,
G.T., MADRAS.

ORDER THE BUILDING GAZETTE

REGULARLY AND

AVOID DISAPPOINTMENT

WE BUILD

FACTORIES, HOSPITALS, POWER STATIONS, RUNWAYS AND BUILDINGS OF EVERY DESCRIPTION.

★

B. RANGIAH

CONTRACTORS TO M.E.S.

ALWAL—SECUNDERABAD.

EMPLOYMENT EXCHANGES

Open to All

The Proprietors of "The Building Gazette" have placed this space at the disposal of the Employment Exchange, Government of India.

The Employment Exchange has on the Register a large number of ex-servicemen of various qualifications, and the Director would be very thankful if Employers would kindly notify to the local office of the Exchange particulars of any vacancy they may have available.

GANNON, DUNKERLEY & Co. (MADRAS) Ltd.

CIVIL, SANITARY AND CONSTRUCTIONAL ENGINEERS.

Specialists in Design and Construction of R.C.C. Structures, Bridges, Buildings, Water Supply and Drainage Schemes, Sanitary Installations, etc.

Registered Office: **14, BOAG ROAD, MADRAS-17.**

Telephone: 88316. *Telegrams:* "VITOPUS"

"AS SAFE AS A HOUSE"

To Illustrate

A GOOD BRICK

You must have

A GOOD BLOCK

THE GORDON PRESS

HAVE BEEN MAKING

BLOCKS OF BRICKS
AND PRINTING TO TASTE

AT 750, HIGH ROAD, TRIPLICANE, MADRAS-5.

177779

AN ACCEPTED FEATURE

OF THE

CONTEMPORARY ROOFING

IS

TILES

YOU CAN ALWAYS OBTAIN
THE BEST MALABAR TILES
FOR ROOFING FROM—

K. A. FRANCIS TILE WORKS

KARUVANNOOR P.O. — COCHIN STATE

Registered No. M. 5257.

"A NATION AT WORK"

For the Re-Building of India

TAKE YOUR SHARE IN THE IMPORTANT

BUILDING TRADES EXHIBITION NUMBER

MAY-ISSUE

A unique Building Trades Exhibition Number of 10,000 copies will be published in May 1949 in which will be described every section of the Building Trades.

The following products will be advertised:

Air-conditioners
Asphalt products
Bar-benders
Books
Bricks
Bulldozers
Carriers
Cast-products
Cement
Concrete Mixers
Cookers
Distemper
Electricals
Equipments
Excavators
Fans
Fittings
Floorings
Furniture
Generators
Glass
Hardboards
Hardware
Hotwater apparatus
Hollow-blocks
Instruments
Insulation boards
Ironmongery
Lime
Lifts
Lightings
Metalworks
Motors
Paints
Plywood
Pumps
Radios
Refrigerators
Reinforcements
Roofings
Sanitaryware
Scrapers
Stone-breakers
Tiles
Timber
Water-proofers
Wallpapers
Wiremesh.

This important Exhibition Number is priced Rs. 1-8 per copy and orders for copies are registered now.

SUBSCRIBERS OF THE BUILDING GAZETTE WILL BE GIVEN A FREE COPY OF THIS EXHIBITION NUMBER.

Further particulars can be had of:

THE BUILDING GAZETTE

1/11, MUKKER NALLAMUTHU STREET, G.T., MADRAS.

EDITED BY T. N. SUBRAMANIAM, A.F.S. (ENGLAND), PRINTED BY T. A. V. NATHAN AT THE GORDON PRESS, MADRAS-5 AND PUBLISHED BY T. RAJARAM FOR THE ASSOCIATED BROTHERS LIMITED, MADRAS.